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# **A FLORA OF THE SANTA ROSA PLATEAU, SOUTHERN CALIFORNIA**



**By Earl W. Lathrop & Robert F. Thorne**

SOUTHERN CALIFORNIA BOTANISTS  
SPECIAL PUBLICATION No. 1

# LIST OF ERRATA

- p. 1, l. 16 from bottom: .3 - .7  
 1. 4 from bottom: published
- p. 2, l. 5 up from Plant Communities: delete extra parenthesis
- p. 3, l. 7 from bottom: delete extra parenthesis
- p. 4, l. 6 under topic 8: purchased  
 1. 7 from bottom: Coyote-thistle
- p. 5, l. 3 from bottom: add Preserve at end of line
- p. 7, l. 14 from bottom: Malosma laurina (fem.)
- p. 10, l. 15 from bottom: common
- p. 11, l. 7: Lasthenia chrysostoma now L. californica DC. ex Lindl.  
 1. 16: Matricaria
- p. 14, l. 25: Chenopodium album
- p. 15, l. 17: Malosma laurina  
 1. 24: Crassula erecta now C. connata (R. & P.) Berger  
 1. 13 from bottom: Cucurbitaceae
- p. 16, l. 15: Mesa  
 1. 7 from bottom: Everlasting-pea
- p. 20, l. 11: San Miguel Satureja
- p. 21, l. 14: delete underlining of Nyctaginaceae
- p. 24, l. 14 from bottom: Calandrinia
- p. 29, l. 10: Solanum americanum now S. ptychanthum Dun. ex DC.
- p. 31, l. 16: C. alternifolius
- p. 32, l. 18: Juncaginaceae
- p. 33, l. 21: Agrostis stolonifera is Piptatherum milaceum (L.) Cosson  
 1. 19 from bottom: not so abundant as
- p. 34, l. 5: tufted  
 1. 8: \*Cynodon dactylon (is introduced)  
 1. 2 from bottom: Leptochloa uninervia is now Diplachne uni-  
nervia (Presl) Parodi
- p. 35, l. 20: hillsides  
 1. 36: tufted
- p. 36, l. 16: not so abundant as  
 1. 19 from bottom: Potamogetonaceae  
 1.13, 15, and 18 from bottom: Potamogeton
- p. 37, l. 18: Steven Boyd
- p. 38, l. 10: Amer. J. Bot. 69
- p. 2a, all three maps: Murietta should be Murrieta

# A FLORA OF THE SANTA ROSA PLATEAU

An annotated list of the vascular plants  
and the plant communities of the  
Santa Rosa Plateau, Santa Ana Mountains



Cover Photograph: Large vernal pool on Santa Rosa Plateau in early Spring 1968 after unusually wet winter. Yellow ring consists of large population of Blennosperma nanum.

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## INTRODUCTION

The flora of the Santa Rosa Plateau was originally published by the authors in *Aliso* 6(4), 1968. Because of the recent acquisition of an 1255 hectare (ha) preserve in the heart of the plateau by the California Nature Conservancy, it was felt that a revision of the flora would be needed. Thanks to the financial support of the Nature Conservancy, Southern California Botanists, and Loma Linda University, the publication of this revision has been made possible.

The Santa Rosa Plateau is a topographic unit in the southern part of the Santa Ana Mountains of the Peninsular Ranges (Fig.1). The Wildomar, Fallbrook, Murrieta, and Temecula USGS topographic maps designate this region, the "Santa Rosa". This 18,218 ha region consists essentially of a plateau with mesas, canyons, and low hills (Figs. 2-5) and is bordered on all sides by steep, chaparral-clad slopes, now with the chaparral often replaced by avocado orchards. The plateau is about 610 m in elevation, and has mostly a grassland-oak woodland cover. The grassland is dissected by scattered oak woodland in valleys and on rolling hills and by chaparral on the slopes of some of the mesas and hills. The isolation of this grassland-oak woodland region, created by the higher elevations of the Santa Ana Mountains on the north and west and by farmlands at lower elevations along the other two sides, produces a distinctive floristic area in southern California (Figs. 2-5).

The soils of the grassland and the oak woodland communities are mostly loams from .5 - 1.2 m deep but include areas of deep clay loam and shallow claypan soils. Rocks outcrop occasionally in the grassland and frequently in the woodlands. The chaparral community is mostly on rocky slopes with decomposed granite and loamy soils from .3 - 7 m deep. Grassy openings are found in the chaparral where underlying shale approaches the surface. Further information on the soils, geology and precipitation patterns applicable to the Santa Rosa Plateau is presented in Lathrop and Thorne (1976a).

## BOTANICAL PUBLICATIONS

The biotic communities of the Santa Ana Mountains, including the Santa Rosa Plateau, were described by Pequegnat (1951). He listed 350 vascular plants for the entire range. Packard (1916) studied the fauna of these mountains, but made no mention of the vegetation. A detailed study of a high elevation manzanita (Arctostaphylos glandulosa) chaparral in the Santa Ana Mountains was published by Wilson and Vogl (1965). This chaparral type, mixed chaparral, however, is usually not found below 1065 m in elevation, which excludes it from the Santa Rosa Plateau. Here it is replaced by the chamise (Adenostoma fasciculatum)

chaparral, chamisal. Cooper (1922), Burcham (1957), Benson (1957), and Munz and Keck (1949), without specific reference to the Santa Ana Mountains, have given generalized descriptions of plant communities, some of which occur on the Santa Rosa Plateau. The first edition of the flora of the Santa Rosa Plateau Flora was published by Lathrop and Thorne in 1968, and several subsequent articles by the authors and others have reported on a variety of studies including those featuring plant ecology, physiology, and biogeography.

The plant communities of the Santa Ana Mountains, including those on the Santa Rosa Plateau, are listed by Thorne (1976) and Vogl (1976). Thorne and Lathrop (1969, 1970) described the plant life of a vernal pool on the Santa Rosa Plateau (Mesa de Colorado) for the first time, and reported a rare aquatic fern (Pilularia americana). Vegetation zonation was measured in the same pool and reported by Kopecko and Lathrop (1975), followed by a study of the chemical characteristics of water and soil by Collie and Lathrop (1976) and Lathrop (1976) respectively. The vernal pools of Mesa de Burro were described and an illustrated account of some representative vernal pool plant species were given by Lathrop and Thorne (1976a, b). A flora of the Santa Ana Mountains (Lathrop and Thorne 1978) included the plant species on the Santa Rosa Plateau. Temporal segregation among annual grassland species was published in the Proceedings of the First International Rangeland Congress (Johnston and Lathrop 1978). Two articles concerning the trees of the oak woodland (Quercus agrifolia and Q. engelmannii) were published by Snow (1979) and Lathrop and Zuill (1984). Griggs and Jain (1983), Rosario and Lathrop (1984), Stagg and Lathrop (1984), and Thorne (1984) described the distributional ecology of some representative vernal pool annuals, including the rare and unique grass genus Orcuttia. Some very instructive physiological studies on diurnal acid metabolism of selected vernal pool plant species have been reported by Keeley (1981a, b, 1982, 1983a), b, 1984a, b), Keeley and Bowes (1982), Keeley and Morton (1982), Keeley and Busch (1984), and Sternberg et al. (1984). A brief account of the plant communities of the Nature Conservancy's "Santa Rosa Plateau Preserve" is reported by Lathrop and Thorne (1985).

## PLANT COMMUNITIES

The plant communities of the Santa Rosa Plateau are listed below according to Thorne (1976). Equivalent communities are also reported by Vogl (1976). Community descriptions are adapted from Lathrop and Thorne (1978) and are listed in order from the lowest elevation on the plateau to the highest, culminating with the vernal pools of the mesa tops, with allowances for overlapping of topographic types.

1. INLAND SAGE SCRUB. This community of "soft" shrubs is best developed along the fringes of chamisal in drier canyon valleys, on slopes, and occasionally as a successional stage in chaparral regeneration. California Sagebrush (Artemisia californica), Black Sage (Salvia mellifera), White Sage (S. apiana), and Wild-buckwheat (Eriogonum fasciculatum) are the dominant shrubs present.

2. CHAMISAL (Figs. 2, 3, 5). While this lower elevation chaparral community shares species of Arctostaphylos, Ceanothus,



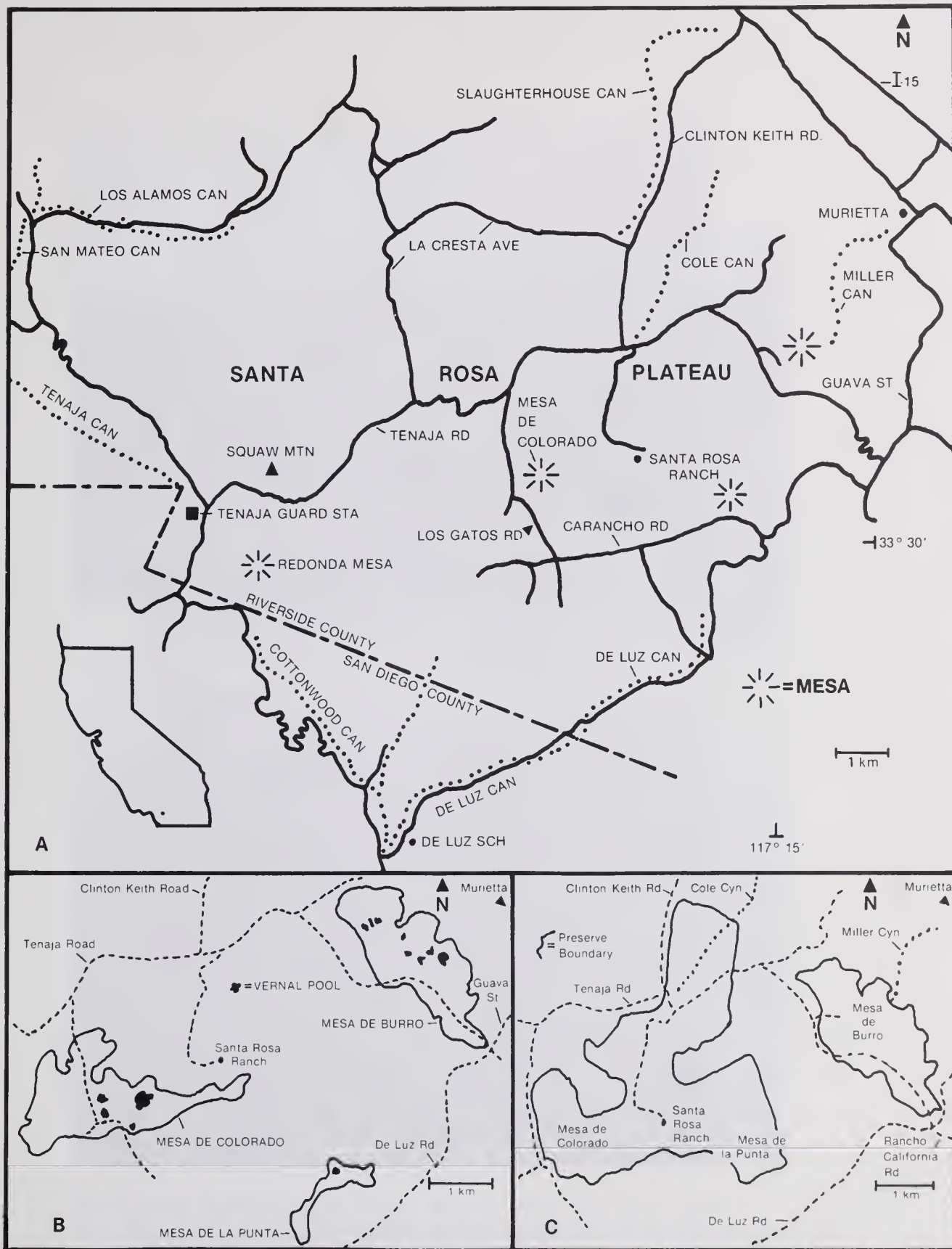


Fig. 1, A-C. —A. Outline map of the Santa Rosa Plateau. Boundary lines of the plateau are: north, Los Alamos and Slaughterhouse Canyons; east, Miller Canyon and Guava St.; south, Cottonwood and De Luz canyons; and east, San Mateo and Tenaja canyons. —B. Inset map showing the location of major mesas. —C. Inset map outlining the Santa Rosa Plateau Preserve.



Fig. 2-3. -2. View of the Santa Rosa Plateau taken from Redonda Mesa showing chamise chaparral, grassland, and oak woodland communities. -3. Aerial view showing the topographic features of Mesa de Burro on the plateau.





Fig. 4-5.-4. Aerial view of the four vernal pools on Mesa de Colorado. -5. Aerial view of Mesa de la Punta on the Santa Rosa Plateau Preserve.

and Rhus, among others, with the mixed chaparral at higher elevations in the Santa Ana Mountains to the north, chamisal is heavily dominated by the shrubby Chamise (Adenostoma fasciculatum), which at times may form nearly pure stands on dry ridges and steep east and south-facing slopes. There are several broad-leaved associates such as Holly-leaved Cherry (Prunus ilicifolia), Toyon (Heteromeles arbutifolia), and Sugarbush (Rhus ovata).

3. SOUTHERN OAK WOODLAND (Figs. 6, 7). This community, considering its range in the entire Santa Ana Mountains, has its greatest development on the Santa Rosa Plateau. Here, along with the southern California grassland with which it is closely associated, it occurs in shallow valleys, on hills, and along the edges of some of the mesas. Coast Live Oak (Quercus agrifolia), found growing mostly in valleys and riparian habitats, and Engelmann Oak (Q. engelmannii), nearly equally abundant in both valleys and on hills, are the conspicuous dominants (California Department of Parks and Recreation 1983). Associated with the woodland trees are various species of Ceanothus, Malosma, Rhus, Ribes, and other shrubby genera intruding from the chamisal.

4. SOUTHERN CALIFORNIA GRASSLAND (Fig. 8). Like the oak woodland, the largest expanse of grassland in the Santa Ana Mountains also occurs on the Santa Rosa Plateau. Perennial bunch grasses such as Purple Needle Grass (Stipa pulchra) and Malpais Bluegrass (Poa secunda) help this community to retain vestiges of its pristine character despite the preponderance of Mediterranean annual grasses and forbs. Some of the more common native species of forbs, Wild-hyacinth (Brodiaea filifolia), Mariposa-lily (Calochortus splendens), Lupine (Lupinus excubitus hallii), and other wild flowers are often very showy among the grasses following an unusually wet winter season.

5. RIPARIAN WOODLAND (Fig. 9). This community is essentially an extension of the oak woodland species, particularly the Coast Live Oak, which is often associated with such semiaquatic trees as the dominant Sycamore or Aliso (Platanus racemosa), Red Willow (Salix laevigata), and Cottonwood (Populus fremontii). This community of trees is restricted to intermittent or permanent streams in most of the major canyons of the plateau, such as the Los Alamos, San Mateo, Tenaja, Slaughterhouse, Cole, Cottonwood Creek, and De Luz canyons (Fig. 1). Some of the intermittent streams which are not in major canyons, such as those in ravines in chaparral, oak woodland, and grassland may have only Sycamore and Willow present.

6. FRESH WATER AQUATIC (Fig. 10). There are relatively few freshwater habitats on the plateau other than the vernal pools and semiaquatic riparian woodland, but there are a few seasonal streams with marshy margins or deep pools (tenajas) and some relatively persistent ponds which harbor interesting aquatics. Among the aquatics listed from the plateau are such free floaters as Water Fern (Azolla filiculoides) and two species of Duckweed (Lemna gibba) and L. minuscula); attached floaters as Clover Fern (Marsilea vestita), Water-starwort (Callitriche heterophylla bolanderi), Water Crowfoot (Ranunculus aquatilis capillaceus), and Pennywort (Hydrocotyle ranunculoides); submersed plants such as Waterwort (Elatine brachysperma), and Horned-pondweed (Zannichellia palustris); and numerous emerged palustrine species of such genera as Carex, Cyperus, Eleocharis, Scirpus, Juncus,

Mimulus, Typha, and Veronica. An introduced species, locally abundant in streams, is Water Cress (Nasturtium officinale).

7. VERNAL POOL EPHEMERAL (Figs. 4, 11). This community is restricted in the Santa Ana Mountains to thirteen pools on three mesas on the Santa Rosa Plateau; four on Mesa de Colorado, one on Mesa de la Punta, and the remainder on Mesa de Burro. The vernal pools support a variety of aquatic and semi-aquatic annuals and perennials which have been rather intensively studied by a number of researchers whose papers are cited in this article. Two of the articles (Lathrop and Thorne 1976b, 1983) are illustrated with line drawings of more than forty representative vernal pool species. The rare Orcutt's Grass (Orcuttia californica) occurs here along with many other rare and interesting species.

8. RUDERAL. The Santa Rosa Plateau area has a long history of almost exclusive use for ranching, starting with a Mexican Land Grant of 1846 awarded to Juan Moreno. This cattle ranch was later purchased by Walter Vail in 1904, becoming a part of the extensive Vail Ranch of the Temecula Valley and surrounding lands. In 1964 the Kaiser Corporation purchased the Vail Ranch and initiated the Rancho California Development. The plateau region was still used for cattle grazing subsequently, and still is at this date in areas that are not yet under development. Until the time that development began on the Santa Rosa Plateau, the area was considered, overall, to be relatively pristine. Disturbance, of course, always provides a haven for opportunistic species and thus many common weedy annuals and perennials become established in various disturbed areas. These introduced species, each indicated in the annotated list by an asterisk, are common components of the ruderal community, some even being restricted to it, the so-called 'fugitives'. Fortunately, the 'Santa Rosa Plateau Preserve', purchased by the California Nature Conservancy in 1984, will help permit the contained vernal pools, streams, woodlands, and grassland to remain pristine. Heavy planting of mostly avocado orchards in Cottonwood Creek and De Luz canyons has resulted in much irrigation with resultant weeds of irrigated ground becoming abundant in those canyons.

#### RELATIONSHIPS OF THE FLORA

The Santa Rosa Plateau is adjunct to the Santa Ana Mountains in the extreme southern part of the range, and except for some of the vernal pool species, the flora of the plateau is essentially similar to that of the rest of the Santa Ana Mountains and of other nearby southern California ranges of similar moderate elevation (Boyd 1983). The Santa Rosa Plateau, therefore, can perhaps be considered unique only because of the vernal pools which account for some of the rarest and most disjunct plants in the Santa Ana Mountains (Lathrop and Thorne 1978). Five endangered plant species in the vernal pools or in the nearby vernal moist grassland are: Orcutt's Grass (Orcuttia californica); Coyote Thistle (Eryngium parishii); Brodiaea (Brodiaea filifolia); Orcutt's Brodiaea (B. orcuttii); and Meadowfoam (Limnathes gracilis parishii). A rare shrub (Arctostaphylos peninsularis), is found in chaparral on the north face of Mesa de Colorado. Another apparently rare species on the plateau (Satureja chandleri), is a low shrub collected only once each in oak woodland of De Luz Canyon and approximately 3 miles





Fig. 6-7.-6. Southern oak woodland community. View facing southeast from the Tenaja Road within the Santa Rosa Plateau Preserve. -7. Close up of Engelmann oaks on the upper slope of a hill.



Fig. 8-9.-8. Southern California grassland. View looking north with Los Alamos Canyon and the Santa Ana Mountains in the background. -9. Riparian woodland in Cole Canyon.



Fig. 10-11. -10. Fresh water aquatic community in a shallow depression on the upper east slope of Redonda Mesa. -11. Vernal pool on Mesa de Colorado.



## ANNOTATED LIST OF VASCULAR PLANTS

The following list includes all the species collected or observed by the authors on the Santa Rosa Plateau of the Santa Ana Mountains. It also includes a few species represented only by earlier specimens on file from the area in the RSA-POM Herbarium of the Rancho Santa Ana Botanic Garden. The most recent record of the species not collected by the authors are listed by the name and collection number of the collector and the date of collection. The first set of voucher specimens taken during the survey are filed in the herbarium of the Rancho Santa Ana Botanic Garden.

Families are arranged alphabetically within subdivisions, classes, or subclasses, as are also genera within families, and species within genera. Family concepts are essentially as in Thorne (1983) with some later modifications. Asterisks indicate naturalized species. Common names are given, when known, usually only for the first species in a genus. Nomenclature of species largely follows that of A Flora of Southern California by Munz (1974) and an article entitled "New subspecific combinations for southern California plants" by Thorne (1978).

The habitat or habitats in which each species has been found in the area are listed along with growth habit and frequency data when known. Subspecific names are used where appropriate, but varieties, considered here as minor genetic variants with little if any geographic or ecological significance, are placed in parentheses or brackets when mentioned at all. A survey was made of the plant species that could be expected to occur on the Santa Rosa Plateau but were not found. All of these species, which are included here with a question mark, have been found in the adjacent Santa Ana Mountains (Lathrop and Thorne 1978).

### Annotated List

#### Sphenopsida

#### Equisetaceae

Equisetum arvense L. Scouring-rush. Collected only along De Luz Creek near De Luz School, K. Fisher 680514-06, 14 May 1968.

Equisetum laevigatum A. Br. Infrequent along streams.

Equisetum telmateia Ehrh. (incl. var. braunii Milde). Giant Horsetail. Infrequent along streams.

#### Lycopsida

#### Isoetaceae

Isoetes howellii Engelm. Quillwort. Ephemeral aquatic locally abundant in several vernal pools and in shallow water of a small intermittent stream along the road into the Santa Rosa Ranch, residence of the manager of the Santa Rosa Plateau.

Isoetes orcuttii A. A. Eat. Locally abundant in the same locations with the preceding species.

## Selaginellaceae

Selaginella bigelovii Underw. Spike-moss. Dry rocky banks and chaparral, often growing at the junction of soil and rock of large exposed granitic boulders.

## Pteropsida

### Filicae

#### Adiantaceae (Pteridaceae)

Adiantum jordanii K. Muell. Maidenhair Fern. Common on moist, shaded banks of ravines, woodlands, and chaparral.

Aspidotis californica (Hook.) Nutt. ex Copel. Lace Fern. Common on rocky, grassland openings in chaparral on mesa and canyon slopes.

Notholaena newberryi D. C. Eat. Cotton Fern. Infrequent on dry rocky slopes in chaparral.

Pellaea andromedaefolia (Kaulf.) Fee. Cliff-brake, Coffee Fern. Frequent on rocky slopes in chaparral, oak woodland, and riparian woodland.

Pellaea mucronata (D. C. Eat.) D. C. Eat. subsp. mucronata. Bird's Foot Fern. Common on dry, rocky or grassy slopes and openings in chaparral.

Pityrogramma triangularis (Kaulf.) Maxon subsp. triangularis. Goldenback Fern. Common on shaded, rocky outcrops and in humus of chaparral and oak woodland.

Pteridium aquilinum (L.) Kuhn subsp. aquilinum (var. pubescens Underw.). Western Brake or Bracken Fern. Locally abundant in moist places under live oaks, as in Cottonwood Canyon.

#### Aspidiaceae

Dryopteris arguta (Kaulf.) Watt. Coastal Wood Fern. Common on shaded rocky slopes of canyons and rock outcroppings in chaparral and grassland.

#### Aspleniaceae

Asplenium vespertinum Maxon. Spleenwort. Rare fern found in crevices of rocks on slopes of mesas.

#### Azollaceae

Azolla filiculoides Lam. Water Fern. Locally abundant on shallow, quiet water of intermittent streams and tenajas.

#### Blechnaceae

Woodwardia fimbriata Sm. in Rees. Western Chain Fern. Locally abundant in moist, shaded live-oak woodland in Cottonwood Canyon.

#### Marsileaceae

Marsilea vestita Hook. and Grev. Clover Fern. Locally abundant

in shallow water and desiccated mud of vernal pools and small streams.

Pilularia americana A. Br. American Pillwort. An inconspicuous aquatic fern locally and seasonally abundant in wet mud and shallow water of vernal pools.

#### Polypodiaceae

Polypodium californicum Kaulf. California Polypody. Common on rocky outcrops in shaded ravines, oak woodland, and chaparral.

#### Coniferae

#### Cupressaceae

Juniperus californica Carr. California-cedar. Rare, only a badly stunted specimen, less than .33 m tall and wide, in a crevice of a large granitic boulder along Tenaja Creek at Tenaja Guard Station, Cleveland National Forest.

#### Angiospermae

#### Dicotyledonae

#### Adoxaceae

Sambucus mexicana Presl. Elderberry. Common large shrub or small tree in riparian woodland and in moist borders of oak woodland.

#### Amaranthaceae

\*Amaranthus albus L. Tumbleweed. Common weed of disturbed areas.  
Amaranthus blitoides S. Wats. Amaranth. Much branched prostrate weed of disturbed sandy places along De Luz Road.

Amaranthus californicus (Moq.) S. Wats. Infrequent weed of open disturbed ground along streams in oak woodland.

\*Amaranthus retroflexus L. Coarse, weedy annual of disturbed ground in De Luz Canyon.

#### Anacardiaceae

Malosma laurinum (Nutt. in T. & G.) Nutt. ex Abrams. Laurel Sumac. Abundant shrub of chaparral and occasional along the borders of oak woodland.

Rhus ovata S. Wats. Sugarbush. Common shrub of chaparral and borders of oak woodland.

Rhus trilobata Nutt. ex T. & G. (var. pilosissima Engl. in DC.). Squaw Bush. Infrequent shrub in chaparral, but more common in the understory of riparian and oak woodlands.

\*Schinus molle L. California Pepper Tree. Occasional escape, especially near habitations where cultivated.

Toxicodendron radicans L. subsp. diversilobum (T. & G.) Thorne. Poison-oak. Much too abundant, variable shrub or vine in shaded canyons, on wooded slopes, about springs or moist places, and in grassy understory of oak woodland.



Apocynaceae (incl. Asclepiadaceae)

- Apocynum cannabinum L. [incl. A. sibiricum Jacq. var. salignum (Greene) Fern.]. Dogbane, Indian-hemp. Infrequent perennial among granitic boulders along intermittent streams.
- Asclepias eriocarpa Benth. Milkweed. Infrequent perennial in grassland and grassy clearings in chaparral.
- Asclepias fascicularis Dcne. in DC. Common perennial in small colonies along streambanks and in moist places.
- \*Vinca major L. Periwinkle. Trailing evergreen vine near residences in shaded places.

Araliaceae (incl. Apiaceae)

- Apiastrum angustifolium Nutt. in T. G. Annual frequent in depressions in grassland and rocky openings in chaparral.
- \*Apium graveolens L. Celery. Infrequent perennial along streams in De Luz Canyon.
- \*Bowlesia incana R. & P. Delicate spring annual frequent in shady places in southern oak woodland.
- Daucus pusillus Michx. Rattlesnake Weed. Common annual in shaded places in oak woodland, chaparral, and riparian woodland.
- Eryngium parishii C. & R. Coyote-thistle, San Diego Button-celery. Spreading prostrate perennial locally abundant and flowering in the desiccated beds of vernal pools.
- \*Foeniculum vulgare Mill. Sweet Fennel. Common stout perennial weed of disturbed places.
- Hydrocotyle ranunculoides L. f. Pennywort. Locally abundant perennial with floating leaves in shallow water of streams.
- Lomatium dasycarpum (T. & G.) C. & R. subsp. dasycarpum. Lace-parsnip. Common perennial in grassland and grassy openings in woodlands and chaparral.
- Lomatium lucidum (Nutt.) Jeps. Wild-parsley. Common perennial in grassy openings in chaparral and oak woodland.
- Lomatium utriculatum (Nutt.) C. & R. Bladder-parsnip. Perennial in grassy openings in chaparral.
- Sanicula arguta Greene ex C. & R. Sanicle, Snakeroot. Infrequent perennial of grassland.
- Sanicula bipinnatifida Dougl. ex Hook. Purple Sanicle. Occasional in grassy clearings of oak woodland and chaparral.
- Sanicula crassicaulis Poepp. ex DC. Pacific Sanicle. Occasional in grassy clearings of oak woodland and chaparral.
- \*Torilis nodosa (L.) Gaertn. Hedge-parsley. Annual common in disturbed shady places.

Asteraceae

- Achillea millefolium L. [var. californica (Pollard) Jeps.]. Yarrow. Occasional perennial in open places in chaparral.
- Acourtia microcephala DC. Common perennial of chaparral and rocky clearings in woodlands.
- Agoseris grandiflora (Nutt.) Greene. Mountain-dandelion. Infrequent perennial of grassland and grassy oak woodland.
- ?Agoseris retrorsa (Benth.) Greene. Perennial of clearings in chaparral.
- Ambrosia psilostachya DC. [var. californica (Rydb.) Blake in

Tidestrom]. Western Ragweed. Common perennial weed of overgrazed swales in grassland or in disturbed, moist areas wet with seepage.

\*Anthemis cotula L. Mayweed. Weedy, ill-smelling annual found only along De Luz Creek.

Artemisia californica Less. Coastal Sagebrush. Abundant shrub of inland sage scrub and sparse open chamisal.

Artemisia douglasiana Bess. in Hook. Mugwort. Rhizomatous perennial abundant along stream banks and in moist shaded riparian woodland.

Baccharis emoryi A. Gray. Broom. Common shrub along banks of run-off stream channels.

Baccharis glutinosa Pers. (incl. B. viminea DC.). Mule Fat. Shrub commonly found in dry stream beds and in moist shaded riparian woodland.

Baccharis pilularis DC. subsp. consanguinea (DC.) C. B. Wolf. Coyote Bush. Rare shrub found once along the De Luz-Murrieta Road in a moist gully.

Bebbia juncea (Benth.) Greene. Sweet Bush. Locally common shrub on dry, rocky road-cut in De Luz Canyon.

Blennosperma nanum (Hook.) Blake. Conspicuous low annual resembling 'Goldfield', found in moist soil, usually forming ring of yellow around desiccating vernal pools, as on cover.

Brickellia californica (T. & G.) A. Gray. Suffrutescent perennial common on rocky, dry streambanks and in clearings in chaparral.

Calycadenia tenella (Nutt.) T. & G. Rosinweed. Common annual in dry soil about vernal pools and in open grassland.

\*Centaurea melitensis L. Tocalote. Abundant annual weed of roadsides, pastured grassland, and open places in grazed woodlands.

Chaenactis artemisiaefolia (Harv. & A. Gray) A. Gray. Pincushion. Common annual in disturbed grassland and chaparral.

Chaenactis glabriuscula DC. Common annual of chaparral and grassland.

\*Chrysanthemum coronarium L. Garland Chrysanthemum. Rare annual weed of roadsides in Cottonwood Canyon.

Cirsium californicum A. Gray. Thistle. Common weedy biennial of disturbed ground in grassy clearing in chaparral and oak woodland and along dry banks of run-off streams in grassland.

Cirsium occidentale (Nutt.) Jeps. Rare weedy biennial of grassy or brushy places.

Cirsium tioganum (Congd.) Petr. Acaulescent perennial of bare, disturbed ground in grassy clearings in chaparral and oak woodland and along dry banks of run-off streams in grassland.

\*Cirsium vulgare (Savi) Ten. Bull Thistle. Coarse weedy biennial found only in disturbed areas along De Luz Road.

\*Conyza bonariensis (L.) Cronq. Common annual weed of disturbed places.

\*Conyza canadensis (L.) Cronq. Horseweed. Common annual weed of dry banks, roadsides, and disturbed places generally.

Conyza coulteri A. Gray. Rare annual of disturbed areas in chaparral.

Corethrogyne filaginifolia H. & A. (incl. several varieties). Variable suffrutescent perennial frequent in open grassy places in chaparral and oak woodland.

?\*Cotula australis (Sieber) Hook. Small, low annual of hard-packed soil of trails and roadsides.

Encelia farinosa A. Gray ex Torr. Brittlebush, Incienso. Infrequent shrub of lower elevations in sage scrub and chaparral.

Erigeron foliosus Nutt. [incl. var. foliosus and var. stenophyllus (Nutt.) A. Gray]. Fleabane Daisy. Common perennial of grassy openings in oak woodland and chaparral.

Eriophyllum confertiflorum (DC.) A. Gray. Golden-yarrow. Suffrutescent perennial common on chaparral-clad slopes.

Evax acaulis (Kell.) Greene. Apparently rare acaulescent annual in open places in chaparral and oak woodland.

?Filago californica Nutt. Small annual of dry, open places, especially burns in sage scrub and chaparral.

\*Filago gallica L. Infrequent annual of disturbed places.

Gnaphalium bicolor Bioletti. Everlasting. Common biennial or perennial in dry open places bordering chaparral.

Gnaphalium californicum DC. Common biennial on rocky slopes and openings in chaparral and along streams.

Gnaphalium chilense Spreng. Infrequent weedy annual of moist, disturbed areas.

Gnaphalium leucocephalum A. Gray. Rare perennial of an open, sandy area in lower Cottonwood Canyon at the confluence of Cottonwood and De Luz creeks.

\*Gnaphalium luteo-album L. Common weedy annual of roadsides, dry slopes, and open places.

Gnaphalium microcephalum Nutt. Frequent herbaceous perennial of dry slopes and open places.

Gnaphalium palustre Nutt. Common annual in drying beds of vernal pools and along intermittent stream banks.

Gnaphalium purpureum L. Purple Cudweed. Infrequent annual of disturbed ground in grassland.

Gutierrezia californica (DC.) T. & G. (G. bracteata Abrams). Matchweed. Frequent subshrub of rocky slopes in cleared chaparral.

Haplopappus palmeri A. Gray subsp. pachylepis Hall. Infrequent shrub of lower elevation chaparral.

Haplopappus squarrosus H. & A. subsp. grindelioides (DC.) Keck. Common shrub of rocky slopes and openings in chaparral.

Haplopappus venetus (H.B.K.) Blake subsp. vernonioides (Nutt.) Hall. Frequent shrub of dry rocky open places in chaparral.

Helianthus annuus L. subsp. lenticularis (Dougl.) Ckll. Sunflower. Common stout annual of roadsides or other disturbed places.

Helianthus gracilentus A. Gray. Tall perennial common in open places in chaparral and along trails and roads.

Hemizonia fasciculata (DC.) T. & G. (incl. H. ramosissima Benth.) Tarweed. Common annual of grassland and grassy openings in chaparral.

Hemizonia paniculata A. Gray subsp. paniculata. Frequent annual of grassland and grassy openings in chaparral.

Heterotheca grandiflora Nutt. Telegraph Weed. Common stout annual of roadsides and other disturbed places at low elevations.

Holocarpa virgata (A. Gray) Keck subsp. elongata Keck. Tarweed. Locally abundant annual of grassland in somewhat disturbed or dry areas.



\*Hypochoeris glabra L. Cat's-ear. Locally abundant weedy annual of grassy, disturbed places.

\*Lactuca serriola L. Prickly Lettuce. Common weedy annual of disturbed grassy areas.

Lagophylla ramosissima Nutt. Hareleaf. Locally abundant annual of open, often hard, dry ground.

Lasthenia chrysostoma (F. & M.) Greene. Goldfield. Common early spring annual of grassland.

Layia platyglossa (F. & M.) A. Gray subsp. campestris Keck. Tidy-tips. Locally abundant early spring annual in open grassland.

Madia gracilis (Sm.) Keck. Tarweed. Common annual of dry, open, clayey or rocky places in chaparral and grassy open places.

Malacothrix clevelandii A. Gray. Infrequent annual of openings in chaparral.

\*Maticaria matricarioides (Less.) Porter. Pineapple Weed. Locally common annual of disturbed, hard-packed ground.

Micropus californicus F. & M. Cottonweed. Infrequent annual of dry open places.

Microseris douglasii (DC.) Sch.-Bip. subsp. platycarpa (A. Gray) K. Chamb. Infrequent acaulescent annual of grassland and grassy open places.

Microseris heterocarpa (Nutt.) K. Chamb. Common annual of grassland.

Microseris linearifolia (DC.) Sch.-Bip. Common annual of grassland, grassy openings in chaparral, and shady areas.

\*Picris echioides L. Ox-tongue. Coarse biennial weed of disturbed places, as on roadsides in De Luz Canyon.

Porophyllum gracile Benth. Infrequent suffrutescent perennial of dry, rocky slopes in chaparral.

Psilocarphus brevissimus Nutt. Woolly-heads. Annual locally abundant in dried beds of vernal pools on the plateau.

Psilocarphus tenellus Nutt. Abundant annual of dried beds of vernal pools, often with preceding species.

Rafinesquia californica Nutt. California-chicory. Common annual of clearings in chaparral and riparian woodland.

Senecio douglasii DC. (var. douglasii). Ragwort. Rare shrub collected in chamise chaparral at the upper part of Slaughterhouse Canyon along Clinton Keith Road.

\*Senecio vulgaris L. Groundsel. Occasional weed of dry places in grassland.

\*Silybum marianum (L.) Gaertn. Milk-thistle. Rare biennial weed on roadside along Murrieta-De Luz Road in Sandia Creek drainage.

Solidago californica Nutt. Goldenrod. Frequent perennial of grassy clearings of oak woodland and chaparral-clad slopes.

\*Sonchus asper (L.) Hill. Sow-thistle. Common weedy annual of disturbed places and grassy openings.

\*Sonchus oleraceus L. Common weedy annual of disturbed grassy or shady places.

Stephanomeria virgata Benth. Common late summer annual of rocky slopes, roadsides, and other dry, open places.

Stylocline gnaphalioides Nutt. Infrequent small wooly annual of open dry slopes, and openings in chaparral.

\*Taraxacum officinale Weber in Wiggers. Common Dandelion. Occasional in grassy waste places.

Tetradymia comosa A. Gray. Frequent shrub of exposed dry areas

in chaparral.

Venegasia carpesioides DC. Rare perennial in riparian woodland of Cottonwood Canyon.

Xanthium strumarium L. Cocklebur. Frequent annual of waste places and stream valleys.

#### Betulaceae

Alnus rhombifolia Nutt. White Alder. Locally abundant tree in riparian woodland of De Luz Canyon.

#### Boraginaceae

Amsinckia intermedia F. M. Common Fiddleneck. Infrequent early spring annual of grassland.

Amsinckia menziesii (Lehm.) Nels. & Macbr. Frequent annual of dry grassy places.

Cryptantha intermedia (A. Gray) Greene. Frequent annual of grassy places and clearings in chaparral.

Cryptantha microstachys (Greene ex A. Gray) Greene. Infrequent annual of grassland and chaparral.

Cryptantha muricata (H. & A) Nels. & Macbr. Common annual of gravelly or rocky open places in chaparral.

\*Echium plantagineum L. European biennial escape adventive in De Luz Canyon. (Frank F. Gander 5786, May 25, 1938).

Heliotropium curassavicum L. subsp. oculatum (Heller) Thorne. Wild Heliotrope. Common perennial of moist ground, gullies, and roadsides.

Pectocarya linearis DC. subsp. ferocula (Jtn.) Thorne. Infrequent small annual of open, often hard-packed ground in chaparral and grassland.

Plagiobothrys acanthocarpus (Piper) Jtn. Infrequent annual of grassland.

Plagiobothrys arizonicus (A. Gray) Greene ex A. Gray var. arizonicus. Infrequent annual of grassland.

Plagiobothrys fulvus (H. & A.) Jtn. var. campestris (Greene) Jtn. Locally abundant spring annual in grassland on mesas.

Plagiobothrys nothofulvus (A. Gray) A. Gray. Popcorn Flower. Occasional spring annual in grassland.

Plagiobothrys undulatus (Piper) Jtn. Locally abundant annual of moist soil and shallow standing water of all the vernal pools on the Santa Rosa Plateau.

#### Brassicaceae

Athysanus pusillus (Hook.) Greene. Annual commonly found in grassy openings in oak woodland.

\*Brassica geniculata (Desf.) J. Ball. Mustard. Abundant weed of roadsides and other disturbed ground.

\*Brassica nigra (L.) Koch. Black Mustard. Infrequent weed of roadsides in chaparral and other disturbed places.

\*Brassica rapa L. subsp. sylvestris (L.) Janchen. Field Mustard. Infrequent annual weed of roadsides and other disturbed areas.

\*Capsella bursa-pastoris (L.) Medic. Shephard's-purse. Common weedy annual of disturbed areas.

Cardamine californica (Nutt.) Greene. Milk Maids. Common perennial of shady places in riparian woodland.

Lepidium nitidum Nutt. Smooth Peppergrass. Annual common on moist banks and margins of vernal pools on the plateau.

\*Nasturtium officinale R. Br. Water Cress. Abundant naturalized perennial in shallow streams.

\*Raphanus sativus L. Wild Radish. Common weed of old fields and other disturbed ground.

\*Sisymbrium altissimum L. Tumble-mustard. Common annual weed of fields, roadsides, and other disturbed ground.

\*Sisymbrium officinale (L.) Scop. Hedge-mustard. Infrequent weedy annual of roadsides and other disturbed areas.

Thysanocarpus curvipes Hook. Lace Pod. The var. curvipes is an infrequent annual on borders of chaparral. The var. elegans (F. & M.) Rob. in A. Gray is frequent in disturbed areas of grassland and along borders of chaparral.

Tropidocarpum gracile Hook. Infrequent annual of dry grassy slopes, as on Mesa de la Punta.

#### Cactaceae

Opuntia littoralis (Engelm.) Ckll. [apparently introgressant with O. ficus-indica (L.) Miller]. Prickly-pear. Occasional clumped succulent perennial, as near junction of Cottonwood and De Luz canyons.

Opuntia phaeacantha Engelm. [var. discata (Griffiths) Bens. & Walk.]. Frequent sprawling cactus locally abundant on dry, overgrazed grassland slopes and openings in chaparral.

#### Callitrichaceae

Callitriche heterophylla Pursh subsp. bolanderi (Hegelm.) Calder & Taylor. Water-starwort. Infrequent slender aquatic plant in clear water of small intermittent stream; also found in at least one vernal pool.

Callitriche longipedunculata Morong. Annual common in nearly all of the vernal pools in shallow standing water.

Callitriche marginata Torr. Dense, small, matted annual of shallow water and muddy margins of vernal pools. Common in most pools on the plateau, and possibly not distinct from C. longipedunculata.

#### Campanulaceae

Downingia bella Hoover. A showy annual abundant in shallow and deeper standing water and moist margins of most vernal pools.

Downingia cuspidata (Greene) Greene. A showy annual occurring mixed with the preceding species in shallow standing water or in isolated stands within the same pools; found in all but one of the 13 pools on the plateau.

Lobelia cardinalis L. subsp. graminea (Lam.) McVaugh. Cardinal Flower. Rare perennial of springy places, hillside 3.2 km south of Murrieta, Munz & Johnston 11,303, Sept. 12, 1928.

#### Caprifoliaceae

Lonicera subspicata H. & A. (var. johnstonii Keck). Honeysuckle. Locally abundant climbing shrub in chaparral, along intermittent streams, and in shaded places under oak woodland.



Symphoricarpos mollis Nutt. in T. & G. Snowberry. Locally abundant understory shrub in riparian woodland, as in lower Cottonwood Creek along the Cold Springs Road.

#### Caryophyllaceae

- \*Cerastium glomeratum Thuill. [var. apetalum (Dumort) Rouy & Foved]. Chickweed. Common annual weed in shaded grassy areas under trees.
- \*Polycarpon tetraphyllum (L.) L. Small annual weed found only in crevice of outcropping rocks in upper Cottonwood Canyon.
- Sagina occidentalis S. Wats. Pearlwort. Rare delicate annual found only on grassy bank of a small stream in Tenaja Canyon.
- Silene antirrhina L. Catchfly. Infrequent slender annual of open places, especially recent burns in chaparral.
- \*Silene gallica L. Campion. Common weedy annual of disturbed ground.
- Silene laciniata Cav. subsp. major Hitchc. & Maguire. Common perennial of grassy shaded ravines in chaparral and oak woodland.
- \*Spergularia bocconii (Scheele) Foucaud. Sand Spurrey. Rare annual weed found only along the edge of the Tenaja Road near the Santa Rosa Ranch.
- \*Stellaria media (L.) Cyrill. Chickweed. Common annual weed of shaded places.

#### Chenopodiaceae

- \*Chenopodium album L. Lamb's Quarters. Frequent annual weed of roadsides and other disturbed ground, especially along the De Luz-Murrieta road.
- \*Chenopodium ambrosioides L. Mexican-tea. Common annual weed of roadsides and along intermittent streams.
- Chenopodium berlandieri Moq. [var. sinuatum (J. Murr.) H. A. Wahl]. Common erect annual in dry grassy places and disturbed ground.
- Chenopodium californicum (S. Wats.) S. Wats. Soap Plant. Infrequent perennial of shaded slopes and grassy openings in oak woodland.
- \*Chenopodium murale L. Annual weed of disturbed ground.
- \*Chenopodium pumilio R. Br. Prostrate, annual weed on roadsides in De Luz Canyon.
- \*Salsola australis R. Br. (S. iberica Sennen & Pau.). Russian-thistle. Common annual tumbleweed along roadsides and in waste places.

#### Cistaceae

Helianthemum scoparium Nutt. Rock-rose. Suffrutescent perennial common in dry rocky places, chiefly in chaparral. The prevalent variety seems to be var. aldersonii (Greene) Munz.

#### Clusiaceae (incl. Hypericaceae)

Hypericum anagalloides Cham. & Schlecht. Tinker's Penny. Rare, but locally abundant perennial found in a seepage area in chaparral 5 miles west of the junction of USFS roads 8SO2,

8S01, and the Tenaja Road, along with H. formosum.  
Hypericum formosum H. B. K. subsp. scouleri (Hook.) C. L. Hitchc.  
St. John's Wort. Infrequent perennial of wet places along  
seasonal streams and in riparian woodland.  
\*Hypericum perforatum L. Klamath Weed. Weedy perennial  
established as small colony along Clinton Keith Road.

#### Convolvulaceae

Calystegia macrostegia (Greene) Brummitt subsp. arida (Greene)  
Brummitt. Morning-glory. Common twining perennial of dry  
slopes and open places in chaparral.  
\*Convolvulus arvensis L. Bindweed. Sprawling, weedy perennial  
locally abundant along de Luz Road.  
Cuscuta californica H. & A. Dodder. Common twining parasite in  
chaparral on various herbs and shrubs, but especially on  
Eriogonum fasciculatum and species of Salvia.  
Cuscuta ceanothi Behr. (C. subinclusa Dur. & Hilg. in 1968  
flora). Infrequent parasite on Malosma laurinum, Prunus  
ilicifolia, Ceanothus and Quercus species, and other shrubs  
in chaparral.

#### Crassulaceae

Crassula aquatica (L.) Schoenl. Stonecrop. Locally abundant  
annual in shallow water or moist soil of most of the vernal  
pools during wet years.  
Crassula erecta (H. & A.) Berger. Common annual, sometimes in  
dense mats on open dry ground.  
Dudleya edulis (Nutt.) Moran. Frequent rosette perennial on  
rocky canyon slopes, especially along Cold Springs (Cottonwood  
Creek) and De Luz roads.  
Dudleya lanceolata (Nutt.) Britt. & Rose. Live-forever. Rosette  
perennial common on dry banks and rocky slopes, mostly in  
chaparral.  
Dudleya pulverulenta (Nutt.) Britt. & Rose. Chalk-lettuce.  
Frequent on steep canyon walls and among granitic outcroppings  
on mesa slopes.

#### Curcubitaceae

Cucurbita foetidissima H. B. K. Calabazilla. Coarse, trailing  
perennial common in sandy or gravelly disturbed places.  
Marah macrocarpus (Greene) Greene. Wild-cucumber. Common climbing  
perennial, especially on low shrubs, of chaparral and in open  
oak woodland.

#### Datisceae

Datisca glomerata (Presl) Baill. Durango Root. Common and locally  
abundant tall perennial of stream beds in riparian and oak  
woodlands, as in Cole, Tenaja, Cottonwood, and De Luz canyons.

#### Elatinaceae

Elatine brachysperma A. Gray. Waterwort. Rare aquatic annual in  
muddy margins of non-vernal pools in oak woodland on the

slopes of Redonda Mesa (Fig. 10) and Mesa de Colorado.  
Elatine californica A. Gray. Submersed rhizomatous annual locally abundant in shallow standing water and bottom mud of vernal pools.  
Elatine chilensis Gay. Common submersed aquatic annual, generally in the same pools as the preceding species.

#### Ericaceae

Arctostaphylos glandulosa Eastw. subsp. glandulosa. Eastwood Manzanita. Common on dry, gravelly to rocky chaparral slopes and ridges.  
Arctostaphylos glauca Lindl. Bigberry Manzanita. Rare or infrequent chaparral shrub, as in San Mateo Canyon.  
Arctostaphylos peninsularis Wells. First collected by Mike Evans, June, 1984, in sparse chamise chaparral on the north slope of mesa de Colorado, near the Santa Rosa Ranch..  
Rhododendron occidentale (T. & G.) A. Gray. Western Azalea. Rare, but locally common, shrub in mesic riparian woodland of upper Cottonwood Canyon along Cold Springs Road.  
Xylococcus bicolor Nutt. Locally abundant shrub of chamise chaparral.

#### Euphorbiaceae

Chamaesyce albomarginata (T. & G.) Small. Rattlesnake Weed, Small Mat. Common prostrate perennial on open ground in grassland and chaparral and along roadsides.  
Chamaesyce polycarpa (Benth.) Millsp. (var. polycarpa). Frequent prostrate perennial of grassland and rocky canyon slopes.  
Chamaesyce serpyllifolia (Pers.) Small. Ground Spurge. Common weedy annual of dry banks, roadsides, and other open, disturbed places.  
Chamaesyce supina (Raf.) Mold. Prostrate annual weed of disturbed ground in De Luz Canyon.  
Eremocarpus setigerus (Hook.) Benth. Turkey-mullein, Dove Weed. Locally abundant low, spreading, annual weed of roadsides and other open, disturbed ground.  
Euphorbia spathulata Lam. Infrequent erect annual of open places in chaparral and oak woodland and on grassy mesa tops.  
\*Ricinus communis L. Castor Bean. Adventive shrub in disturbed ground along De Luz-Murrieta Road.

#### Fabaceae

Amorpha californica Nutt. False-indigo. Common deciduous shrub of wooded or brushy slopes, especially in chaparral.  
Astragalus pomonensis Jones. Locoweed. Perennial common in grassland and grassy openings in oak woodland.  
Lathyrus laetiflorus Greene subsp. alefeldii (White) Brads. Everlasting Pea. Common perennial climbing over shrubs in chaparral and along wooded stream margins.  
Lotus hamatus Greene. Common prostrate annual of grassland and chaparral.  
Lotus heermannii (Dur. & Hilg.) Greene. Frequent prostrate perennial of moist places in oak woodland.  
Lotus purshianus (Benth.) Clem & Clem. Spanish-clover. Common



annual in grassy clearings in chaparral and oak woodland.

Lotus scoparius subsp. brevialatus (Ottley) Munz. A perennial collected in chaparral in 1938 by Wolf (7962).

Lotus scoparius (Nutt. in T. & G.) Ottley subsp. scoparius. Deerweed. Common suffruticose perennial of dry slopes, chaparral, and oak woodland.

Lotus strigosus (Nutt. in T. & G.) Greene. Common annual of dry banks and other disturbed places.

Lotus subpinnatus Lag. Infrequent annual of open ground in chaparral.

Lupinus agardianus Heller. Lupine. Frequent annual of grasslands and grassy areas under oak woodland.

Lupinus bicolor Lindl. subsp. microphyllus (S.Wats.) D. Dunn. Common annual herb of grassland, often locally abundant following unusually wet winters.

Lupinus concinnus J. C. Agardh. subsp. concinnus. Infrequent annual of grassland and open rocky places in chaparral.

Lupinus densiflorus Benth. subsp. austrocollum (C. P. Sm.) D. Dunn ex Thorne. Locally abundant annual along grassy road banks and in grassy openings in woodlands.

Lupinus excubitus Jones subsp. hallii (Abrams) D. Dunn ex Thorne. Occasional suffrutescent perennial of grassy banks and hills.

Lupinus hirsutissimus Benth. Infrequent prickly, robust annual of open rocky areas of chaparral and road cuts.

Lupinus sparsiflorus Benth. subsp. sparsiflorus. Frequent annual of openings in chaparral and oak woodland.

Lupinus succulentus Dougl. ex Koch. Occasional succulent annual on mesas 13 km NW of Murrieta.

Lupinus truncatus Nutt. ex H. & A. Common annual of grassland and open rocky places.

\*Medicago polymorpha L. Bur-clover. Common weak-stemmed annual of grassy places.

\*Medicago sativa L. Alfalfa. Commonly cultivated and occasionally established along roadsides.

\*Melilotus albus Desr. White Sweet-clover. Frequent annual weed along streams.

\*Melilotus indicus (L.) All. Indian Sweet-clover. Common weed of grassy places, especially in disturbed ground.

Psoralea macrostachya DC. Leather Root. Frequent perennial to 3 m, in moist areas of canyons and shallow ravines in riparian and oak woodlands.

\*Spartium junceum L. Spanish-broom. Rare naturalized shrub in sage scrub in lower Cottonwood Canyon.

Trifolium albopurpureum T. & G. Clover. Frequent annual of grassland and grassy openings in chaparral and woodlands.

Trifolium amplexans T. & G. [var. truncatum (Greene) Jeps.]. Sack Clover. Frequent annual in moist, grassy places, as about vernal pool borders.

Trifolium ciliolatum Benth. Frequent annual of grassy slopes.

Trifolium gracilentum T. & G. Frequent slender-stemmed annual of open, grassy areas.

Trifolium microcephalum Pursh. Common annual of open, moist, grassy places.

Trifolium tridentatum Lindl. [var. aciculare (Nutt.) McDermott]. Common annual of grassy, open areas.

Trifolium variegatum Nutt. in T. & G. Frequent annual of moist grassy places.

Trifolium wormskioldii Lehm. Frequent creeping perennial of damp places in canyons and moist grassy areas.

Vicia americana Muhl. ex Willd. Vetch. Infrequent trailing perennial of grassy openings in oak woodland and on dry open banks.

Vicia exigua Nutt. in T. & G. Infrequent annual on rocky slopes in chaparral and oak woodland.

\*Vicia villosa Roth. Winter Vetch. Rare European annual found only along De Luz Creek.

#### Fagaceae

Quercus agrifolia Nee [incl. var. oxyadenia (Torr.) J. T. Howell.]. Coast Live Oak. Dominant tree of southern oak woodland in valleys, canyons, and on less arid slopes (Fig.6).

Quercus dumosa Nutt. Scrub Oak. A conspicuous and often dominant element in chaparral on dry rocky slopes, less conspicuous in oak woodland.

Quercus dumosa Nutt. X Q. engelmannii Greene. Infrequent hybrid with an irregular distribution along the upper slopes of hills and mesas along the Tenaja Road on the Santa Rosa Plateau.

Quercus engelmannii Greene. Engelmann Oak. Dominant tree of drier upland sandy slopes in southern oak woodland (Fig. 7).

Quercus wislizenii A. DC. (var. frutescens Engelm.). Interior Live Oak. Rare in southern oak woodland.

#### Garryaceae

Garrya veatchii Kell. Silk-tassel Bush. Rare shrub in San Mateo Canyon and along the Tenaja Grade 2 km NW of Murrieta.

#### Gentianaceae

Centaurium venustum (A. Gray) Rob. Canchalagua. Frequent annual of grassy places or in sand along streams.

Frasera parryi Torr. Green-gentian. Infrequent perennial of open dry places in southern oak woodland.

#### Geraniaceae

\*Erodium brachycarpum (Godr.) Thell. [E. obtusiplicatum (Maire, Weiler, & Wilcz) J. T. Howell]. Storksbill. Frequent weedy annual of grassland and other grassy places.

\*Erodium cicutarium (L.) L'Her. Filaree. Abundant annual in southern California grassland, open cultivated ground, and other dry, grassy places.

\*Erodium moschatum (L.) L'Her. Common annual of grassland and disturbed areas in chaparral.

\*Geranium dissectum L. Cut-leaved Geranium. Frequent weedy annual collected along drainageways in grassland and in other grassy places.

#### Grossulariaceae

Ribes indecorum Eastw. White-flowered Currant. Common erect shrub in chaparral but also in riparian woodland.

## Hydrophyllaceae

- Emmenanthe penduliflora Benth. Whispering Bells. Common annual of dry, rocky, or grassy places, particularly after burns or other disturbances.
- Eriodictyon crassifolium Benth. Yerba Santa. Infrequent but locally abundant shrub with showy flowers found in dry, rocky and disturbed places in chamise chaparral.
- Eucrypta chrysanthemifolia (Benth.) Greene. subsp. chrysanthemifolia. Common annual of shaded places in woodlands and chaparral.
- Nemophila menziesii H. & A. subsp. menziesii. Baby Blue-eyes. Common annual of grassy, rocky openings in woodlands. [The subsp. integrifolia (Parish) Munz is infrequent in grassy openings in oak woodland].
- ?Phacelia brachyloba (Benth.) A. Gray. Annual of chaparral, especially after burns.
- Phacelia cicutaria Greene subsp. hispida (A. Gray) Beauchamp ex Thorne. Common annual widely distributed in a variety of habitats, but chiefly in dry, rocky areas in chaparral and oak woodland.
- Phacelia distans Benth. Wild-heliotrope. Common annual of grassland and borders of disturbed areas in chaparral.
- Phacelia grandiflora (Benth.) A. Gray. Rare coarse annual found only once on a dry slope along an intermittent stream.
- Phacelia imbricata Greene subsp. patula (Brand) Heckard. Rare perennial found on a rocky, grassland slope.
- Phacelia minor (Harv.) Thell. Wild-Canterburybell. Infrequent annual in open rocky areas in chamise chaparral, along road banks on the south side of Mesa de Colorado, and in Cottonwood Canyon.
- Phacelia suffrutescens Parry. Frequent suffrutescent perennial of shaded rocky canyons and chaparral, often locally abundant.
- Pholistoma auritum (Lindl.) Lilja. Fiesta Flower. Weak-stemmed annual frequent in shaded places in chamise chaparral and riparian woodland.

## Juglandaceae

- \*Juglans californica S. Wats. California Walnut. Infrequent tree of riparian woodland found, possibly adventive, along Cottonwood Creek. Also cultivated at Santa Rosa Ranch.
- \*Juglans regia L. English Walnut. Escaped (or planted?) tree established on a roadside.

## Lamiaceae

- \*Marrubium vulgare L. White Hoarhound. Common low weedy perennial of cleared areas in chaparral and disturbed places generally over a wide elevational range.
- \*Mentha spicata L. Spearmint. Rare perennial escape in moist areas in riparian woodland, as along Cole Canyon.
- Monardella lanceolata A. Gray. Mustang Mint. Common annual of burned areas, grassland, and grassy openings in chaparral and oak woodland.
- Salvia apiana Jeps. White Sage. Common shrub of inland sage scrub and open sparse areas in chamise chaparral.



Salvia clevelandii (A. Gray) Greene. Infrequent shrub found only 2.5 miles south of the USFS Tenaja Guard Station in an open area along the road and bordering oak woodland 1 mile west of the junction of USFS roads 8SO2 and 8SO1 and the Tenaja Road near Johnson Ranch.

Salvia columbariae Benth. subsp. columbariae. Chia. Common slender annual of dry, open, rocky or grassy areas, mostly on road banks and disturbed slopes.

Salvia mellifera Greene. Black Sage. Common dark shrub of inland sage scrub and chamise chaparral.

Satureja chandleri (Bdg.) Druce. San Miguel Satureja. Rare shrub collected by Lathrop 5654, April 10, 1965 along the border of oak woodland approximately 200 m south of the Cleveland National Forest, Trabuco District boundary along the road between the USFS Tenaja Guard Station and Cottonwood Creek. A second location was in an oak woodland ravine along the De Luz-Murrieta Road, approximately 5 km from Murrieta via Guava St., Lathrop 6287, May 1, 1966.

Scutellaria tuberosa Benth. subsp. australis Epl. Skullcap. Infrequent perennial found only in Tenaja Canyon and on a dry slope in chaparral 8 km NE of Murrieta.

Stachys rigida Nutt. ex Benth. subsp. rigida. Hedge-nettle. Common perennial of moist places along streams or in moist gullies.

Trichostema lanceolatum Benth. Vinegar Weed. Unpleasant-smelling annual locally abundant in dry, open, or disturbed areas, as along roadsides.

#### Lauraceae

Umbellularia californica (H. & A.) Nutt. California-bay. Rare, but locally common stout tree at the upper part of Cottonwood Creek in riparian woodland along Cold Springs Road.

#### Limnanthaceae

Limnanthes gracilis Howell var. parishii (Jeps.) C. T. Mason. Meadowfoam. Rare delicate, showy annual first found by Tom Griggs, March 1985 in a shallow drainage ravine 1/4 mile east of the largest vernal pool on Mesa de Colorado. Since then found by the authors in moist soil beside this large pool.

#### Linaceae

Hesperolinon micranthum (A. Gray) Small. Wild Flax. Infrequent annual of open grassy places in chaparral.

#### Loasaceae

Mentzelia montana Davids. subsp. montana. Poorman's Patches. Rare annual of moist soil on stream margins and desiccated mud of vernal pools.

#### Lythraceae

Lythrum californicum T. & G. Loosestrife. Perennial found only along small stream along De Luz Road south of Murrieta.

Lythrum hyssopifolium L. Locally abundant slender annual of moist soil on stream margins and desiccated mud of vernal pools.

#### Malvaceae

Malacothamnus fascicularis (Nutt.) Greene subsp. laxiflorus (A. Gray) Thorne. Bush Mallow. Frequent shrub of dry, rocky ravine slopes in chaparral and oak woodland.

Malvella leprosa (Ort.) Krapov [Sida hederacea (Dougl.) Torr.]. Alkali Mallow. Locally abundant perennial of desiccated beds of vernal pools.

?\*Malva parviflora L. Cheeseweed. Weed of disturbed places.

Sidalcea malvaeflora (DC.) A. Gray ex Benth. subsp. sparsifolia C. L. Hitchc. Checker. Frequent perennial of grassland and open grassy areas in oak woodland.

#### Nyctaginaceae

Mirabilis californica A. Gray (var. californica). Four-o'clock. Frequent perennial of dry banks in sage scrub and chaparral.

#### Oleaceae

Fraxinus dipetala H. & A. Flowering Ash. Infrequent small tree or shrub usually found in chaparral and on upper slopes of riparian woodland.

Fraxinus velutina Torr. [var. coriacea (S. Wats.) Rehder]. Arizona Ash. Infrequent tree along stream in Los Alamos Canyon and in other riparian woodland.

\*Olea europaea L. Olive. Mediterranean tree adventive locally and persisting from old plantings along De Luz Road.

#### Onagraceae

Boisduvalia densiflora (Lindl.) S. Wats. Common annual of moist places along streams in oak woodland and chaparral.

Camissonia bistorta (Nutt. ex T. G.) Raven. Infrequent annual of disturbed and open, sandy areas.

Camissonia californica (Nutt. ex T. & G.) Raven. Frequent annual of disturbed places in inland sage scrub, chaparral, and oak woodland.

Camissonia hirtella (Greene) Raven. Frequent annual of grassland, oak woodland, and disturbed slopes in burned-over chaparral.

Camissonia ignota (Jeps.) Raven. Common annual in grassland and other open places.

Camissonia micrantha (Hornem. ex T. & G.) Raven. Infrequent annual of grassland and open areas of chaparral.

Clarkia dudleyana (Abrams) Macbr. Infrequent annual in chaparral.

Clarkia epilobioides (Nutt.) Nels. & Macbr. Common annual in chaparral and southern oak woodland.

Clarkia purpurea (Curt.) Nels. & Macbr. subsp. quadrivulnera (Dougl.) Lewis & Lewis. Common annual of open grassy areas.

Epilobium canum (Greene) Raven subsp. mexicanum (Presl.) Raven. [Zauschneria californica Presl. subsp. mexicana (Presl.) Raven]. California-fuchsia. Locally abundant suffrutescent perennial of dry, rocky slopes, roadsides, and canyons.

Epilobium ciliatum Raf. subsp. ciliatum [=E. adenocaulon Hausskn.

var. parishii (Trel.) Munz]. Willow Herb. Common perennial of moist places, especially in riparian woodland in canyons.  
Ludwigia peploides (H. B. K.) Raven. Locally abundant perennial in shallow water of seasonal streams.  
Oenothera californica (S. Wats.) S. Wats. Evening-primrose. Rare perennial found only in grassland.  
Oenothera elata H. B. K. subsp. hirsutissima (A. Gray ex S. Wats.) Dietrich. [O. hookeri T. & G. subsp. grisea (Bartlett) Munz]. Frequent tall perennial found along streams.

#### Oxalidaceae

Oxalis albicans Kunth subsp. californica (Abrams) Eiten. Wood-sorrel. Common perennial of rocky slopes in grassland, chaparral, and canyons.  
?\*Oxalis corniculata L. Weed of roadsides, lawns, and other disturbed places.

#### Paeoniaceae

Paeonia californica Nutt. ex T. & G. California Peony. Common perennial of chaparral and rocky, grassy open areas of oak and riparian woodlands.

#### Papaveraceae

?Dendromecon rigida Benth. subsp. rigida. Tree Poppy. Stiff shrub of road cuts and open exposed banks in chaparral.  
Dicentra chrysantha (H. & A.) Walp. Golden Ear-drops. Locally frequent tall perennial on chaparral and woodland burns.  
Eschscholzia californica Cham. [incl. var. peninsularis (Greene) Munz]. California Poppy. Infrequent herb in grassy open places.  
Meconella denticulata Greene. Slender-stemmed annual poppy of grassy slopes along chaparral margins. Rare, found only in Los Alamos Canyon, near the junction with San Mateo Canyon.  
Platystemon californica Benth. Cream Cups. Locally abundant annual of open grassy places.

#### Plantaginaceae

Plantago bigelovii A. Gray. subsp. bigelovii. Plantain. Small annual, locally abundant on the margins of vernal pools.  
Plantago erecta Morris subsp. erecta. Infrequent annual of dry, open, rocky or grassy places.  
\*Plantago lanceolata L. Ribgrass, English Plantain. Locally abundant perennial, acaulescent weed along De Luz Road.  
\*Plantago major L. Common Plantain. Common acaulescent, perennial weed of moist, grassy, often disturbed places.

#### Platanaceae

Platanus racemosa Nutt. Sycamore, Aliso. Common large tree of riparian woodland.

#### Polemoniaceae

Allophyllum glutinosum (Benth.) A. & V. Grant. A common annual of



dry, rocky banks, ravines, grassland, and chaparral.  
Eriastrum sapphirinum (Eastw.) Mason subsp. dasyanthum (Brand) Mason. Common annual in grassland.  
Gilia angelensis V. Grant. Angel Gilia. Infrequent delicate annual of grassy places under oak canopies and along roadsides in chaparral.  
Gilia capitata Sims subsp. abrotanifolia (Nutt. ex Greene) V. Grant. Common annual of cleared chaparral and open slopes of riparian woodland.  
Leptodactylon californicum H. & A. subsp. glandulosum (Eastw.) Mason. Prickly-phlox. Rare spiny half shrub on steep open chaparral banks.  
Linanthus androsaceus (Benth.) Greene subsp. luteolus (Greene) Mason. Frequent annual in grassland and chaparral.  
Linanthus dianthiflorus (Benth.) Greene subsp. dianthiflorus. Ground-pink. Locally abundant early spring annual of grassland.  
Linanthus floribundus (A. Gray) Greene ex Mlkn. subsp. floribundus. Infrequent bushy, suffrutescent perennial of dry, rocky or grassy places and wooded canyons.  
Linanthus liniflorus (Benth.) Greene subsp. pharnaceoides (Benth.) Mason. Infrequent annual of dry, open, grassy places in chaparral, oak woodland, and wooded canyons.  
Linanthus pygmaeus (Brand) J. T. Howell subsp. continentalis Raven. Rare annual of dry, chaparral-clad slopes.  
Microsteris gracilis (Dougl. ex Hook.) Greene subsp. gracilis. Infrequent annual of grassy, rocky places.  
Navarretia atractyloides (Benth.) H. & A. Frequent spinulose annual of dry places in chaparral and grassland.  
Navarretia hamata Greene subsp. hamata. Infrequent annual of grassy open woods and borders of chaparral, with mephitic odor.  
Navarretia intertexta (Benth.) Hook. Rare small annual collected only on the dry margin of a vernal pool on Mesa de Burro.  
Navarretia prostrata (A. Gray) Greene. Locally abundant on desiccated margins and beds of vernal pools.

#### Polygalaceae

Polygala cornuta Kell. subsp. fishiae (Parry) Munz. Milkwort. Infrequent slender shrub of shaded rocky places, as in Cole Canyon.

#### Polygonaceae

Chorizanthe fimbriata Nutt. Spine Flower. Common annual of rocky grassland and chaparral.  
Chorizanthe polygonoides T. & G. subsp. longispina (Goodm.) Munz. Rare annual found only along streamway among lava boulders on the Mesa de Burro.  
Chorizanthe procumbens Nutt. Frequent annual of grassland and clearings in chaparral.  
Chorizanthe staticoides Benth. subsp. foliosum (Nutt.) S. Stokes. Turkish Rugging. Common annual of recently disturbed areas such as fire breaks and bare areas in grassland, chaparral, and woodlands.  
?Eriogonum davidsonii Greene. Wild-buckwheat. Annual of

chaparral and other dry, rocky areas.

Eriogonum elongatum Benth. Locally abundant perennial of dry, rocky places in chaparral.

Eriogonum fasciculatum Benth. subsp. foliosum (Nutt.) S. Stokes. Common and important, dominant shrub of inland sage scrub and dry, rocky, open places in chamise chaparral.

Eriogonum gracile Benth. Common annual of grassland and dry, open slopes.

Eriogonum nudum Dougl. ex Benth. subsp. saxicola (Heller) Munz. Rare perennial collected once along a stream on the Santa Rosa Plateau.

Eriogonum thurberi Torr. Rare annual, collected only from burned-over area in chaparral north of Murrieta, 500 m elevation, Munz and Johnston 5348, May 19, 1922.

Lastarriaea coriacea (Goodm.) Hoover. Rare annual, collected only from chaparral burn north of Murrieta, 460 m elevation, Munz and Johnston 5364, May 19, 1922.

\*Polygonum argyrocoleon Steud. ex Kunze. Slender, erect, weedy annual occasional in moist, disturbed places along De Luz Creek.

\*Polygonum aviculare L. Knotweed. Common prostrate annual weed of roadsides and other disturbed areas.

Polygonum lapathifolium L. Erect annual in moist, sandy soil along De Luz Creek.

Polygonum punctatum Ell. Erect perennial locally abundant along De Luz Creek.

Pterostegia drymarioides F. & M. Common delicate, decumbent annual of shaded areas along streams in canyons, in chaparral, and in oak woodland.

\*Rumex acetosella L. Sheep Sorrel. Rare rhizomatous, perennial weed of disturbed ground along the Tenaja Guard Station Road just south of the Cleveland National Forest, Trabuco District boundary.

\*Rumex conglomeratus Murr. Green Dock. Common tall perennial of wet margins of streams and ponds and in moist pastured swales.

\*Rumex crispus L. Curly Dock. Common perennial of marshy borders of streams and other moist places.

Rumex salicifolius Weinm. (incl. R. californicus Rech.). Willow Dock. Common perennial of stream beds and margins, muddy pool borders, and other moist places in ravines.

#### Portulacaceae

Calandrina ciliata (R. & P.) DC. [var. menziesii (Hook.) Macbr.]. Red maids. Common small early spring annual of grassland swales and other semi-moist, grassy, open places.

Calyptridium monandrum Nutt. in T. & G. Locally abundant on chaparral burns, as north of Murrieta, Munz & Johnston 5365, May 19, 1922.

Claytonia perfoliata D. Donn. ex Willd. Miner's-lettuce. Common annual of shaded and vernal moist places in woodlands and ravines through chaparral.

Montia fontana L. subsp. amporitana Sennen. Infrequent small annual locally abundant in seasonally wet drainageways in grassland and on the wet margins of vernal pools.

\*Portulaca oleracea L. Purslane. Succulent, prostrate, annual weed of disturbed places along the De Luz Road.

## Primulaceae

- \*Anagallis arvensis L. Scarlet Pimpernel. Common annual weed of disturbed places.  
Anagallis minima (L.) E.H.L. Krause. Infrequent tiny annual of desiccated vernal pool margins.  
Dodecatheon clevelandii Greene subsp. clevelandii. Shooting-star. Locally abundant perennial of grassland and open, grassy areas of chaparral and inland sage scrub.  
Samolus parviflorus Raf. Water-pimpernel. Locally abundant perennial of shallow water and moist margins of streams and ponds.

## Ranunculaceae

- ?Clematis lasiantha Nutt. in T. & G. Virgin's-bower. Woody vine clambering over shrubs in chaparral.  
Clematis pauciflora Nutt. in T. & G. Common woody climber on shrubs and small trees in canyons and near streams, mostly in chaparral.  
Delphinium cardinale Hook. Scarlet Larkspur. Erect perennial locally abundant in cleared areas and on chaparral burns.  
Delphinium parryi A. Gray. Larkspur. Infrequent perennial of grassland, grassy open areas of woodland, and disturbed areas in chaparral.  
Myosurus minimus L. (var. apus Greene). Mouse-tail. Rare annual collected only on desiccated margins and beds of a few vernal pools on Mesas de Colorado and Burro.  
Ranunculus aquatilis L. [var. capillaceus (Thuill.) DC.]. Water-crowfoot. Locally abundant aquatic perennial of shallow water of ponds, vernal pools, and slow seasonal streams.  
Ranunculus californicus Benth. subsp. californicus. California Buttercup. Common tall perennial of vernal moist slopes, pastured swales, and grassy valleys.  
?Ranunculus cymbalaria Pursh subsp. saximontanus (Fern.) Thorne. Stoloniferous annual of muddy margins and shallow water of streams.  
Thalictrum polycarpum (Torr.) S. Wats. Meadow-rue. Infrequent but locally abundant, tall perennial of shaded canyons, woods, and streams, and moist places in chaparral.

## Rhamnaceae

- Ceanothus crassifolius Torr. Buckbrush. Common, often dominant, shrub widespread in chamise chaparral.  
Ceanothus leucodermis Greene. Wild-lilac. Showy early spring flowering shrub on dry, rocky slopes in chaparral.  
Ceanothus tomentosus Parry subsp. olivaceous (Jeps.) Munz. This chaparral shrub has a range similar to the preceding species.  
Rhamnus californica Esch. subsp. californica. Coffeeberry. Frequent evergreen shrub of riparian woodland and chaparral.  
Rhamnus crocea Nutt. in T. & G. Redberry. Common understory shrub in oak woodland and in chaparral.  
Rhamnus ilicifolia Kell. Buckthorn. Common shrub of chaparral, but also found in riparian woodland.



## Rosaceae

- Adenostoma fasciculatum H. & A. Chamise, Greasewood. Dominant, and often the sole shrub of chamise chaparral on dry south and east, exposed ridges.
- Cercocarpus betuloides Nutt. ex T. & G. subsp. betuloides. Mountain-mahogany. Infrequent shrub or small tree on dry, chaparral-clad slopes.
- Cercocarpus minutiflorus Abrams. Locally abundant shrub in ravines in oak woodland and chaparral, and on dry slopes.
- Heteromeles arbutifolia M. Roem. subsp. arbutifolia. Toyon. Common evergreen tree of semi-dry chaparral-clad slopes and borders of riparian woodland.
- Potentilla glandulosa Lindl. subsp. glandulosa. Cinquefoil. Frequent perennial along intermittent streams and in moist places in woodland and chaparral.
- Prunus emarginata (Dougl.) Walp. Bitter Cherry. Infrequent deciduous shrub of rocky ridges and dry slopes.
- Prunus ilicifolia (Nutt.) Walp. subsp. ilicifolia. Holly-leaved Cherry. Frequent evergreen shrub or small tree of chaparral and drier wooded canyon slopes.
- Rosa californica C. & S. Wild Rose. Common deciduous shrub in understory of riparian woodland and shaded, moist places in southern oak woodland.
- \*Rubus procerus P. J. Muell. Himalaya Berry. Prickly naturalized evergreen shrub sprawling over other shrubs at Santa Rosa Ranch.
- Rubus ursinus C. & S. California Blackberry. Infrequent scrambling shrub in riparian woodland, as in Cottonwood and De Luz canyons.

## Rubiaceae

- Galium angustifolium Nutt. in T. & G. subsp. angustifolium. Bedstraw. Suffrutescent perennial common in chaparral and on rocky, open or grassy slopes.
- \*Galium aparine L. Common sprawling annual weed of shaded places in oak woodland and chaparral.
- Galium nuttallii A. Gray subsp. nuttallii. Common perennial of rocky slopes, especially in chaparral, but also found in drier locations in riparian woodland.

## Salicaceae

- Populus fremontii S. Wats. subsp. fremontii. Cottonwood. Infrequent tree along streams, in riparian woodland, and in drainage ravines in oak woodland.
- Populus trichocarpa T. & G. subsp. trichocarpa. Black Cottonwood. Less common than the preceding species but found along intermittent stream courses on the plateau and in adjacent canyons.
- Salix gooddingii Ball (incl. var. variabilis Ball). Black Willow. Shrub or small tree locally abundant in riparian woodland of Cottonwood Creek.
- Salix hindsiana Benth. [incl. var. leucodendroides (Rowlee) Ball]. Sandbar Willow. Locally abundant shrub in riparian woodland in Cottonwood and De Luz canyons.
- Salix laevigata Bebb. [incl. var. arequipa (Jeps.) Ball]. Red

Willow. Common tree in riparian woodland.  
Salix lasiandra Benth. Shrub or small tree locally abundant in riparian woodland in Cottonwood and De Luz canyons.  
Salix lasiolepis Benth. Arroyo Willow. Abundant shrub or small tree along streams in canyons and in riparian woodland.

#### Saururaceae

Anemopsis californica Hook. Yerba Mansa. Locally abundant stoloniferous perennial of wet grassy margins of streams, as in Cole, Cottonwood, and De Luz canyons.

#### Saxifragaceae

Jepsonia parryi (Torr.) Small. Frequent slender perennial on moist, shaded banks of riparian habitats, as in Cole Canyon.  
Lithophragma affine H. & A. subsp. mixtum R. L. Taylor. Woodland-star. Frequent perennial of moist, shaded or grassy slopes in oak woodland.  
Saxifraga californica Greene. Saxifrage. Rare slender perennial of mossy, vernal moist, granitic rock outcrops and shaded grassy slopes of riparian woodland, collected only in Murrieta and Los Alamos canyons.

#### Scrophulariaceae

Antirrhinum coulterianum Benth. in DC. Wild Snapdragon. Common slender, long annual of dry, rocky, often disturbed slopes, mostly in chaparral but also in riparian woodland.  
Antirrhinum kelloggii Greene. Frequent annual of dry, open or grassy slopes, chaparral, and chaparral burns.  
Antirrhinum nuttallianum Benth. in DC. Common annual of rocky banks and grassy clearings on chaparral-clad slopes, locally abundant on burn scars in chaparral.  
Castilleja affinis H. & R. subsp. affinis. Indian Paint-brush. Infrequent perennial of dry, wooded, or grassy slopes and chaparral.  
Castilleja foliolosa H. & A. Common perennial of chaparral and inland sage scrub.  
Castilleja stenantha A. Gray. Infrequent annual of wet stream banks, as in Los Alamos Canyon.  
Collinsia concolor Greene. Rare annual, found only in oak woodland along the Tenaja Guard Station Road just south of the Cleveland National Forest, Trabuco District boundary.  
Collinsia heterophylla Buist ex Grah. subsp. heterophylla. Chinese Houses. Common spring annual of grassland and grassy, shaded areas of oak woodland.  
Collinsia parryi A. Gray. Frequent annual of moist shaded woodlands.  
Cordylanthus filifolius Nutt. ex Benth. in DC. Bird's Beak. Common annual of oak woodland and chaparral.  
Diplacus aurantiacus (Curt.) Jeps. subsp. australis (McMinn) R. M. Beeks ex Thorne. Bush Monkey-flower. Frequent shrub of chaparral and dry, rocky slopes.  
Diplacus puniceus Nutt. Sticky Monkey-flower. Common shrub of inland sage scrub and chamise chaparral.  
Diplacus puniceus Nutt. X D. aurantiacus (Curt.) Jeps.

subsp. australis (McMinn) R. M. Beeks ex Thorne. Infrequent putative hybrid, usually with parent species.  
Keckiella antirrhinoides (Benth.) Straw. subsp. antirrhinoides. Bush Penstemon. Common shrub of inland sage scrub and chamise chaparral. Its abundant yellow flowers rate it along with Wild-lilacs for conspicuous, showy spring flower displays.  
Keckiella cordifolia (Benth.) Straw. Honeysuckle Penstemon. Common shrub of chaparral and dry, rocky slopes of riparian woodland in canyons.  
Linaria canadensis (L.) Dum-Cours. [var. texana (Scheele) Penn.]. Blue Toadflax. Infrequent annual in grassland and oak woodland.  
Mimulus brevipes Benth. Monkey Flower. Common annual of open or grassy slopes and disturbed areas in chaparral.  
Mimulus cardinalis Dougl. ex Benth. Red Monkey Flower. Common viscid-villous perennial of wet places along streams and on slopes wet with seepage.  
Mimulus diffusus Grant. Infrequent annual of grassy openings in chaparral and oak woodland.  
Mimulus floribundus Dougl. ex Lindl. Frequent rather slimy annual of wet stream margins, as in Cole, Tenaja, and San Mateo canyons.  
Mimulus guttatus Fisch. ex DC. subsp. guttatus. Yellow Monkey Flower. Locally abundant herbaceous perennial of stream banks, vernal pool borders, and other wet grassy areas.  
Mimulus pilosus (Benth.) S. Wats. Frequent annual of oak woodland understory and sandy stream margins.  
Orthocarpus densiflorus Benth. [incl. var. gracilis (Benth.) Keck]. Owl's-clover. Rare annual found in some abundance in the vernal moist grasslands surrounding the largest vernal pool on Mesa de Colorado.  
Orthocarpus purpurascens Benth. (incl. var. pallidus Keck). Common annual of grassland, oak woodland, and grassy open areas in chaparral.  
Pedicularis densiflora Benth. ex Hook. Indian-warrior. Infrequent perennial of grassland and grassy openings in woodlands, as in Tenaja Canyon.  
Penstemon heterophyllus Lindl. subsp. australis (Munz & Jtn.) Keck. Beard-tongue. Common perennial of chaparral and dry, rocky or grassy slopes in canyon woodlands.  
Penstemon spectabilis Thurb. ex A. Gray. Common perennial of chaparral and dry, exposed places on roadsides.  
Scrophularia californica C. & S. subsp. floribunda (Greene) Shaw. Figwort, California Bee Plant. Infrequent tall perennial of rocky or grassy slopes in chaparral and open banks in woodland.  
Veronica americana (Raf.) Schw. Brooklime. Rare perennial found only in small stream between the Tenaja Road and Los Alamos Canyon.  
 \*Veronica anagallis-aquatica L. Locally abundant emerged aquatic in De Luz Creek.  
Veronica peregrina L. subsp. xalapensis (H.B.K.) Penn. Speedwell. Rare annual collected only on the margin of a few vernal pools.



## Solanaceae

- Datura wrightii Regel (D. meteloides A. DC.). Toloache.  
Infrequent bushy perennial of gravelly soils in open places in grassland and disturbed ground generally.
- Nicotiana bigelovii (Torr.) S. Wats. (var. wallacei A. Gray).  
Wild Tobacco. Infrequent annual in chaparral.
- \*Nicotiana glauca Grah. Tree Tobacco. Abundantly naturalized weedy shrub of ravine banks, roadsides, and other open, disturbed places.
- \*Solanum americanum Mill. (S. nodiflorum Jacq.). Nightshade.  
Weedy annual locally abundant along streams in De Luz Canyon.
- Solanum douglasii Dunal in DC. Common perennial of rocky banks and near streams, especially in canyons with chaparral and live oak woodland.
- Solanum xanti A. Gray (var. xanti). Chaparral Nightshade. Common shrub of open, rocky banks, and grassy openings in chaparral and woodlands.

## Urticaceae

- Parietaria hespera Hinton (var. hespera). (P. floridana of Calif. authors). Pellitory. Frequent slender annual of rocky slopes, usually in shade of trees or rocks.
- Urtica dioica L. subsp. holosericea (Nutt.) Thorne. Creek Nettle. Common tall, slender perennial of moist places along shaded streams.

## Valerianaceae

- Plectritis ciliosa (Greene) Jeps. subsp. insignis (Suksd.) Morey.  
Infrequent slender annual collected only in grassland and grassy margins and openings of chaparral.

## Verbenaceae

- Verbena lasiostachys Link. [incl. var. abramsii (Mold.) Jeps.].  
Vervain. Frequent perennial of moist places, mostly along grassy stream banks.

## Violaceae

- Viola pedunculata T. & G. Johnny-jump-up. Locally abundant perennial of grassland and of grassy undergrowth of oak woodland.

## Viscaceae

- Phoradendron tomentosum (DC.) Engelm. ex A. Gray subsp. macrophyllum (Engelm.) Wiens. Mistletoe. Common woody parasite on branches of Platanus racemosa, less common on species of Salix and Populus.
- Phoradendron villosum (Nutt. in T. & G.) Nutt. subsp. villosum.  
Rare woody parasite on branches of Quercus agrifolia and Q. engelmannii.

## Vitaceae

\*Parthenocissus quinquefolia (L.) Planch. Virginia Creeper. Vine adventive in roadside dump in riparian woodland near junction of Cold Springs and De Luz-Murrietta roads.

Vitis girdiana Munson. Wild Grape. Locally abundant liana forming hanging shrouds from trees in riparian woodland.

## \*Zygophyllaceae

\*Tribulus terrestris L. Puncture Vine. Frequent naturalized annual weed on bare, disturbed ground, especially on roadsides.

## Monocotyledonae

### Agavaceae

Yucca whipplei Torr. subsp. whipplei. Our Lord's-candle. Common woody shrub of chaparral and upper canyon walls of riparian woodland, seldom abundant locally, however.

### Alliaceae

Allium haematochiton S. Wats. Wild Onion. Frequent bulbiferous perennial of dry, rocky or clayey slopes in grasslands and chaparral.

Allium lacunosum S. Wats. subsp. lacunosum. Locally abundant perennial in grassland of the Mesa de Colorado (a range extension from Los Angeles County).

Allium peninsulare Lemmon. Frequent bulbiferous perennial of open, rocky places or openings in or along chaparral on canyon slopes.

Bloomeria crocea (Torr.) Cov. subsp. crocea. Golden-stars. Frequent corm-bearing perennial of open, grassy or rocky places, especially in openings in chaparral. One of the more conspicuous and showy spring wildflowers.

Brodiaea filifolia S. Wats. Frequent corm-bearing perennial of grassy slopes, mesa tops, and openings in chaparral.

Brodiaea orcuttii (Greene) Baker. Rare corm-bearing perennial in grassy areas about several of the vernal pools on Mesa de Burro and Mesa de Colorado, usually found on adobe soil.

Brodiaea terrestris Kell. subsp. kernensis (Hoov.) Niehaus. Frequent corm-bearing perennial of grassland, as on Mesa de Colorado.

Dichelostemma pulchellum (Salisb.) Heller. Blue Dicks. Common corm-bearing perennial in open, grassy places, found most abundant in grassland.

Muilla maritima (Torr.) S. Wats. Locally abundant bulbiferous perennial along rocky, grassy drainageways in grassland and chaparral.

### Cyperaceae

Carex alma Bailey. Sedge. Frequent perennial along streams and in springy places.

Carex barbarae Dewey. Infrequent perennial collected along streams in San Mateo and De Luz canyons.

Carex densa (Bailey) Bailey. Rare perennial found along a stream in Tenaja Canyon.

Carex praegracilis W. Boott. Common perennial of stream margins.

Carex schottii Dewey. Infrequent perennial along marshy borders of streams.

Carex senta Boott. Infrequent perennial, several collections from seasonally wet stream banks in Tenaja Canyon and oak woodland.

Carex triquetra Boott. Frequent perennial of rocky slopes and clayey flats, and in chaparral.

\*Cyperus alternifolius L. Umbrella-plant. Large perennial abundantly naturalized along De Luz Creek.

Cyperus eragrostis Lam. Umbrella Sedge. Locally abundant perennial in upper Cottonwood Canyon.

\*Cyperus esculentus L. Nut-grass, Chufa. Perennial weed established with C. alternifolius in moist, sandy soil along De Luz Creek.

Eleocharis acicularis (L.) R. & S. [incl. E. radicans (Poir.) Kunth]. Spike-rush. Common small, stoloniferous perennial of muddy stream margins and vernal pools.

Eleocharis macrostachya Britt. in Small. Common husky perennial of muddy stream margins and vernal pools.

Eleocharis montevidensis Kunth [var. parishii (Britt.) V. Grant]. Abundant perennial of moist places, often associated with E. macrostachya. Some immature specimens appear to be the var. montevidensis.

Scirpus acutus Muhl. Bulrush, Tule. Infrequent perennial of marshy places along intermittent streams.

Scirpus californicus (C. A. Mey.) Steud. Tall rhizomatous tule with bluntly triangular stems, found only in shallow water of intermittent stream in Cole Canyon.

Scirpus microcarpus Presl. Bulrush. Locally abundant perennial along streams.

#### Hyacinthaceae

Chlorogalum parviflorum S. Wats. Soap Plant. Common bulbiferous perennial of dry, open, rocky or grassy places.

Chlorogalum pomeridianum (DC.) Kunth. Common bulbiferous perennial found in the same habitats as the preceding species.

#### Iridaceae

Sisyrinchium bellum S. Wats. Blue-eyed-grass. Locally abundant perennial of moist, grassy drainageways in grassland and moist open areas in chaparral.

#### Juncaceae

Juncus balticus Willd. Wire Rush. Infrequent perennial of moist places, usually along streams.

Juncus bufonius L. Toad Rush. Very common annual of moist open places, especially vernal pools and stream margins.

Juncus effusus L. (var. pacificus Fern. & Wieg.). Rush. Locally abundant perennial in shallow water of streams in canyon woodlands.

Juncus macrophyllus Cov. Frequent perennial along intermittent streams in oak woodland.



Juncus mexicanus Willd. Abundant, often dominant, perennial of stream margins and seasonally moist places.  
Juncus oxymeris Engelm. Rhizomatous perennial found on wet sandy margin of intermittent stream in Cole Canyon.  
Juncus rugulosus Engelm. Frequent tall perennial of shallow, rocky drainageways in grassland and riparian and oak woodlands.  
Juncus sphaerocarpus Nees in Funk. Rare annual found only on desiccated margins of a few vernal pools.  
Juncus textilis Buch. Infrequent, though locally abundant, tall perennial along stream margins in oak woodland.  
Juncus tiehmii Ertter (J. kelloggii of S. Calif. authors). Rare, inconspicuous, tiny annual locally abundant in vernal wet depressions in grassland near several vernal pools and in riparian woodland in sandy bed of Cole Canyon.  
Juncus xiphioides E. Mey. Common perennial of moist places, especially along streams.

#### Jucaginacaceae

Lilaea scilloides (Poir.) Haum. Flowering-quillwort. Common in mud and shallow water of vernal pools and intermittent streams.

#### Lemnaceae

Lemna gibba L. Duckweed. Tiny floating annual locally abundant on shallow pools of streams in wooded ravines.  
Lemna minuscula Herter (L. minima Phil.). Common floating annual on shallow water of vernal pools and intermittent streams.  
Lemna minor L. Locally abundant floating annual on shallow water of streams along De Luz Road.

#### Liliaceae

Calochortus albus Dougl. ex Benth. Mariposa-lily. Infrequent bulbiferous perennial of shaded places in oak woodland and grassy openings in chaparral, usually only appearing after unseasonally heavy winter rains.  
Calochortus splendens Dougl. ex Benth. The commonest of the Mariposa-lilies in grassland, on slopes in oak woodland, and in grassy places in chaparral and inland sage scrub.  
Calochortus weedii Wood. Infrequent, showy perennial of dry, often heavy or rocky soil of grassland or chaparral.  
Fritillaria biflora Lindl. Chocolate-lily. Infrequent bulbiferous perennial of grassy places in oak woodland but also found on exposed grassy slopes and grassy openings in chaparral, as on the east slope of Mesa de Colorado, the head of Miller Canyon on Mesa de Burro, and on the east-facing slope of Miller Mountain near the USFS Tenaja Guard Station.  
Lilium humboldtii Roehl & Leichtl. subsp. ocellatum (Kell.) Thorne. Humboldt Lily. Infrequent tall, bulbiferous perennial in riparian woodland in canyons, as at Fisherman's Camp at the junction of Tenaja and San Mateo canyons and in Cottonwood Canyon.

## Melanthiaceae

Zigadenus fremontii (Torr.) Torr. ex S. Wats. (var. fremontii).  
Star-lily. Infrequent bulbiferous perennial of chaparral burns  
and under shrubs in chaparral.

## Najadaceae

Najas marina L. Naiad. Stiff, prickly, submersed aquatic,  
locally abundant in small reservoir near junction of De  
Luz and Cottonwood canyons.

## Orchidaceae

Habenaria unalascensis (Spreng.) S. Wats. Rein Orchid. Rare  
perennial collected only under live oaks near the head of  
Slaughterhouse Canyon along the Clinton Keith Road.

## Poaceae

\*Agropyron elongatum (Host.) Beauv. Wheat Grass. Perennial  
frequently established along roadsides, especially in  
chaparral.

Agrostis diegoensis Vasey. Bent Grass. Common rhizomatous  
perennial of grassland and grassy clearings in oak woodland.

\*Agrostis semiverticillatus (Forsk.) C. Chr. Abundant perennial  
of stream margins and other moist places.

\*Agrostis stolonifera L. var. major (Gaud.) Farwell. Red Top.  
Tall perennial adventive along stream tributary to De Luz  
Creek.

\*Aira caryophyllea L. Hair Grass. Delicate annual weed of open,  
disturbed ground along the Tenaja Guard Station Road just  
south of the Cleveland National Forest, Trabuco District  
boundary.

Alopecurus howellii Vasey. Foxtail. Locally abundant in dry  
vernal pool beds and other muddy flats.

\*Avena barbata Brot. Slender Wild Oat. Annual weed abundant in  
grasslands everywhere.

\*Avena fatua L. Wild Oat. Annual weed heavily naturalized in  
grassland, but not as abundant as A. barbata.

Bothriochloa barbinodis (Lag.) Herter. Infrequent perennial on  
rocky slopes in clearings of chaparral, as on Redonda Mesa,  
also along De Luz-Murrieta Road.

\*Bromus arenarius Labill. Australian Chess. Infrequent weedy  
annual of rocky places in grassland, woodlands, and chaparral.

Bromus carinatus H. & A. California Brome. Frequent perennial of  
dry, open, rocky or grassy places.

\*Bromus diandrus Roth. Ripgut Grass. Abundant weedy annual  
grass of disturbed places, especially abundant in cleared  
chaparral and heavily grazed grassland.

Bromus grandis (Shear) Hitchc. in Jeps. Brome. Rare perennial in  
rocky grassland.

\*Bromus mollis L. (incl. \*B. molliformis Lloyd.). Soft Chess.  
Abundant weedy annual of grassland and disturbed grassy places  
in chaparral. Occasionally dense in dry, semibare soil above  
the borders of vernal pools.

Bromus pseudolaevipes Wagnon. Infrequent perennial in chaparral.

\*Bromus rubens L. Red Brome. Common weedy annual, locally

abundant on burns and other disturbed ground.

\*Bromus tectorum L. Cheat Grass. Common weedy annual of disturbed places in chaparral and woodlands.

\*Cortaderia atacamensis (Phil.) Pilger. Pampas Grass. Robust tufted perennial found as a single non-flowering plant in shallow drainage in chaparral, on USFS rd. 8502, 2.3 miles west of Johnson Ranch.

Cynodon dactylon (L.) Pers. Bermuda Grass. Creeping perennial weed common in disturbed grassy places.

Deschampsia danthonioides (Trin) Munro [var. gracilis (Vasey) Munz]. Hairgrass. Locally abundant in oak woodland and in vernal moist grassland near margins of vernal pools.

\*Digitaria sanguinalis (L.) Scop. Crabgrass. Locally abundant weedy annual of disturbed ground along De Luz-Murrieta Road.

Distichlis spicata (L.) Greene subsp. stricta (Torr.) Thorne. Salt Grass. Infrequent perennial of drainage swales in grassland and moist places in ravines.

\*Echinochloa colonum (L.) Link. Jungle-rice. Weedy annual on stream margin along De Luz-Murrieta Road.

\*Echinochloa crusgalli (L.) Beauv. Barnyard Grass. Common weedy annual of roadsides, drainage ditches, and other severely disturbed ground.

Elymus condensatus Presl. Giant Ryegrass. Common coarse perennial of rocky slopes in chaparral and woodlands, especially along ravine banks.

Elymus glaucus Buckl. subsp. glaucus. Ryegrass. Common perennial of moist, grassy stream margins and shaded places.

Elymus X macounii Vasey. Rare densely tufted perennial collected only on grassy borders of chaparral near Murrieta.

Elymus triticoides Buckl. Common perennial of moist, grassy margins of intermittent streams, ravine banks in oak woodland, and seepage areas in chaparral.

\*Eragrostis mexicana (Hornem.) Link subsp. virescens (Presl) Koch & Sanchez (E. orcuttiana Vasey). Lovegrass. Tall, stout, open-panicked, weedy annual along small stream crossing De Luz-Murrieta Road.

\*Gastridium ventricosum (Gouan) Schinz & Thell. Nitgrass. Common annual of open, rocky or grassy places and in grassy openings in chaparral.

Hordeum californicum Covas & Steb. Wild Barley. Frequent perennial of moist, grassy stream banks in grasslands and oak and riparian woodlands.

\*Hordeum geniculatum Allioni. Common weedy annual of open grassland, occasionally forming sparse stands in seasonally wet depressions in grassland or in dry beds of shallow vernal pools.

\*Hordeum glaucum Steud. Locally abundant weedy annual of grassy places.

\*Hordeum leporinum Link. Foxtail Barley. Common weedy annual of open grassy places and disturbed ground.

Koeleria macrantha (Ledeb.) Spreng. Junegrass. Tufted perennial infrequent in grassland and grassy openings in chaparral and oak woodland.

\*Lamarckia aurea (L.) Moench. Goldentop. Locally abundant annual on dry, rocky, exposed soils of grassland and grassy openings in chaparral.

Leptochloa uninervia (Presl) Hitchc. & Chase. Sprangletop. Locally abundant weedy annual along De Luz-Murrieta Road.



- \*Lolium perenne L. subsp. multiflorum (Lam.) Husnot. Italian Ryegrass. Frequent annual of grassy slopes in canyons above riparian woodland and along borders of chaparral.
- \*Lolium temulentum L. Darnel. Infrequent annual of rocky, grassy hillsides.
- Melica frutescens Scribn. Melic. Infrequent perennial of dry, rocky slopes in chaparral and inland sage scrub.
- Melica imperfecta Trin. Common perennial widespread throughout, mainly among rock outcrops in chaparral, but occasionally in rocky, grassy areas of oak woodland.
- Muhlenbergia asperifolia (Nees & Mey.) Parodi. Scratchgrass. Rare perennial found only once on a stream margin in oak woodland.
- Muhlenbergia microsperma (DC.) Kunth. Dropseed Grass. Infrequent annual of rock crevices in canyons, as in De Luz Canyon, and exposed areas in chaparral.
- Muhlenbergia rigens (Benth.) Hitchc. Infrequent, but locally abundant tall, dense tufted grass along ravine banks of run-off streams in grassland and oak woodland, occasional on grassy hillsides.
- Orcuttia californica Vasey. Infrequent annual grass appearing in dry beds of several vernal pools, where sometimes locally abundant.
- Panicum capillare L. (var. occidentale Rydb.) Locally abundant weedy, paniculate annual of disturbed ground along De Luz-Murrieta Road.
- \*Paspalum dilatatum Poir. Dallas Grass. Infrequent perennial abundantly established in grasslands in Cole Canyon and other drainageways.
- Paspalum paspaloides (Michx.) Scribn. (P. distichum L.). Knotgrass. Common perennial of shallow water and moist ground along intermittent streams and about ponds.
- \*Pennisetum setaceum (Forsk.) Chiov. Fountain Grass. Handsome bunch grass established along Cottonwood and De Luz canyon roads.
- \*Phalaris aquatica L. Harding Grass. Infrequent tufted perennial in moist swales in grassland, at NW base Redonda Mesa. (Tenaja rd. 3.3 mi. east of Jtn. w/ USFS rds. 8S01 and 8S02).
- \*Phalaris caroliniana Walt. Canary Grass. Rare perennial found only on the desiccated margins of a few vernal pools.
- \*Phalaris minor Retz. Infrequent annual found only in a shaded ravine and dry beds of several vernal pools.
- \*Poa annua L. Water Grass. Frequent in moist, rocky or grassy areas.
- \*Poa bulbosa L. Rare perennial of grasslands, first found near the USFS Tenaja Guard Station.
- Poa secunda Presl. [incl. P. scabrella (Thurb.) Benth. ex Vasey]. Malpais Bluegrass. Common tufted perennial grass of open, often rocky slopes in grassland, oak woodland, and chaparral.
- \*Polypogon monspeliensis (L.) Desf. Beard Grass. Common annual of stream margins and other wet places.
- ?\*Schismus barbatus (L.) Thell. Tufted annual of roadside clearings in chaparral and on burn scars.
- \*Secale cereale L. Rye. Cultivated annual, occasionally spontaneous on roadsides, in waste places, and in fields.
- Setaria geniculata (Lam.) Beauv. Bristlegrass. Infrequent weedy perennial of Cottonwood Canyon and slope of Mesa de la Punta.
- \*Setaria viridis (L.) Beauv. Weedy annual established along

stream crossing De Luz-Murrieta Road.

Sitanion hystrix (Nutt.) J. G. Sm. Squirreltail. Common caespitose perennial of dry grassland areas.

Sitanion jubatum J. G. Sm. Infrequent perennial of rocky or chaparral-clad slopes.

\*Sorghum halepense (L.) Pers. Johnson Grass. Infrequent tall perennial of grassy banks of ravines in grassland, oak woodland, and chaparral.

Stipa cernua Stebbins & Love. Needle Grass. Frequent tufted perennial on dry, grassy slopes.

Stipa coronata Thurb. in S. Wats. Common large perennial grass, usually found among rocks on steep grassy slopes and on rocky slopes in chaparral and oak woodland.

Stipa lepida Hitchc. Feather Grass. Slender perennial of open slopes in grassland and occasional burn scars in chaparral, but not as abundant as the next species.

Stipa pulchra Hitchc. Purple Needle Grass. Very common native, tufted perennial of dry slopes of grassland, chaparral, and grassy open areas of oak woodland.

Vulpia bromoides (L.) S. F. Grant [Festuca dertonensis (All.) Asch. & Graebn.]. Foxtail Fescue. Frequent annual of open grassland and woodland clearings.

\*Vulpia myuros (L.) K. C. Gmel. (var. hirsuta Hack.) (Festuca megalura Nutt.). Rattail Fescue. Very abundant annual of dry open places in grassland. The typical var. myuros is infrequent in grassland and grassy openings in chaparral, and locally abundant in the vernal moist zone of vernal pools.

?Vulpia octoflora (Watt.) Rydb. Six-weeks Fescue. Annual of openings in chaparral and burn scars.

#### Potamogetonaceae

Potamogeton foliosus L. Pondweed. Locally abundant submersed herb in shallow water of streams and the reservoir in De Luz Canyon.

Potamogeton pectinatus L. Sago Pondweed. Infrequent submersed aquatic in shallow water of streams.

Potamogeton pusillus L. Rare submersed aquatic in shallow water of the largest vernal pool on Mesa de Colorado.

#### Typhaceae

Sparganium eurycarpum Engelm. Bur-reed. Rare emerged perennial in shallow water of intermittent stream in Cole Canyon.

Typha angustifolia L. Cattail. Frequent perennial in shallow ponds and streams.

Typha domingensis Pers. Locally abundant in streams.

Typha latifolia L. Tall, rhizomatous, colonial, emerged perennial along streams, as in De Luz Canyon.

#### Zannichelliaceae

Zannichellia palustris L. Horned-pondweed. Locally abundant submersed herb of shallow water in slow-running streams.

# NUMERICAL SUMMARY OF THE VASCULAR PLANTS OF THE SANTA ROSA PLATEAU

	INDIGENOUS			NATURALIZED Additional		
	Families	Genera	Species	Families	Genera	Species
Pteridophytes	10	16	20	0	0	0
Conifers	1	1	1	0	0	0
Dicotyledons	67	210	357	1	43	81
Monocotyledons	16	45	91	0	16	38
Totals	<u>94</u>	<u>272</u>	<u>469</u>	<u>1</u>	<u>59</u>	<u>119</u>

Grand Totals: Families 95; Genera 331; Species 588

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